Exploring compositional relationships between acousmatic music and electronica

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Abstract

This research explores the compositional relationships between acousmatic music and electronica in order to offer a way of unifying the two musical forms. The original contribution to knowledge comes from the creation of a portfolio of compositions that extend the two idioms towards one another, resulting in a series of works that are presented as a journey between and a fusion of electronica and acousmatic music. The dissertation offers a collection of associated theories that underpin the creation of the portfolio.

In turn this dissertation addresses three areas that relate to compositional materials, the use of space, with consideration for both compositional and performance space, and a selection of associated cultural considerations that relate to the musics in question. The literature that relates to these three aspects is introduced and discussed with relation to the portfolio.

The method behind the composition of the portfolio was not intended to present a collection of fusion works from the outset, but rather to begin composing a selection of purely acousmatic works in order to gain practical compositional understanding of the music. The process was then to grow the portfolio towards the electronica realm, and in parallel map this journey in the dissertation.

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DVD contents

The attached DVD contains the following files:

Read me (pdf)

Contains channel configuration diagram for 8 channel works.

1 Décalage

Folder contains:

8 24/48 mono aiff files

Folder containing 24/48 2 channel interleaved version for reference

2 Solid Phase

Folder contains:

8 24/48 mono aiff files

Folder containing 24/48 2 channel interleaved version for reference

3 Low-bypass

Folder contains:

8 24/48 mono aiff files

4 Papa November

Folder contains:

2 channel 24/48 interleaved aiff ready for 2 channel listening

5 Volmet North

Folder contains:

2 channel 24/48 interleaved aiff ready for 2 channel listening

6 The Batteries Of Orchards

Folder contains:

8 24/48 mono aiff files

Folder containing 2 channel interleaved 24/44 binaural version for easy reference over headphones.

7 Flinch-Rest

Folder contains:

2 channel 24/48 interleaved aiff ready for 2 channel listening

8 Reload

Folder contains:

2 channel 24/48 interleaved aiff ready for 2 channel listening

9 Refract

Folder contains:

2 channel 24/48 interleaved aiff ready for 2 channel listening

10 Repeat

Folder contains:

2 channel 24/48 interleaved aiff ready for 2 channel listening

CHAPTER 1

1.0 Introduction

This portfolio and its associated dissertation seek to explore the theoretical and compositional relationships that exist between acousmatic music and electronica. The 90 minute portfolio of works acts as an original contribution to the field of electronic music composition and attempts to provide a series of answers to the question *how are acousmatic music and electronica compositionally related?*

Many regard these two forms of music as sitting on opposing sides of a high art/popular art divide, but the opening assertion is that these two forms of music share some compositional strategies and can be placed on aesthetically similar ground. In the opening paragraphs I wish to start by breaking from the academic convention of writing in the third person to allow the reader to acquire a personal account of my own compositional background. By doing so I hope to set the scene for what has lead me to undertake this doctoral study.

Background

During the early 1990s I took my first steps into composing electronic music. In 1992 I acquired a second hand Commodore Amiga 500+ with the initial intention of using the machine to play computer games such as *Lemmings* (Psygnosis 1991) and *Another World* (Delphine Software 1991). Buried amongst the some forty 3.5″ floppy discs that came with the computer was a copy of *ProTracker* (Hamre, Hamre, Vahsen & Johnsrud 1990), a freeware four track music tracker programme. The striking thing about this software was that it allowed me, a person with no formal musical training, to be able to think musically for the first time and start arranging sounds into musical compositions. Throughout the 1990s I became absorbed in the post Rave culture of the UK electronic music scene and became drawn to the alternative sounds and musical structures of electronica. This passion naturally lead me to explore the idiom in my own music and, following on from these

initial playful forays into music making, I found myself at the end of the 1990s studying on an undergraduate degree in Sonic Arts at Middlesex University, with a thirst for experimental electronic music composition. It was at this time that I was introduced to acousmatic music; a musical form that I, like many others before and after me, struggled to grasp and appreciate as 'music'. During my studies I crossed a tangible void from the familiar forms of electronica into the world of acousmatic music, a world that was presented without reference to more popular forms of electronic music of the time and contained shapes and forms that were unfamiliar and, at first, nonsensical. However, electronica seemed to me to share some of the ideas and ideologies of musique concrète and acousmatic music composition, but was entirely missing as a reference point.

Whilst the initial stimulus for this research has its roots in a collection of ideas from some 15 years ago, its importance is still relevant for compositional and potentially educational purposes. There have been several attempts by other researchers to make inroads into the area between dance music genres and acousmatics; Tom Shave (PhD 2013) and Robert Ratcliffe (PhD 2012) from Keele University and Monty Adkins from Huddersfield are good examples. All three of these composers have used the term 'hybrid' in their writings to describe their practice, which attempts to create new works by extracting elements of one idiom and applying them to the other. The author is deliberately avoiding the term 'hybrid' to describe the works in the portfolio for various reasons. In biological terms the resulting outcome of the process of hybridisation is a new entity that has similarities to its parent/source but is separate and distinct from them. The portfolio can not be adequately described in these terms, as its focus is not to create a musical form that is entirely distinct from the two idioms being explored. The term hybrid relates to the creation of an entity which is an outcome derived from two often contrasting sources, but it is proposed that the two musical sources being explored as part of this research are not actually that different or distinct from each other. The term is synonymous with botany and genetics but it is not the intention of this research to create a genetically modified version of electronic music. Neither does this research start out with the premise that either of the idioms contain elements that need to be bred out, but rather that each musical style contains compositional ideas that can be explored without excluding elements that make up either of the styles in their pre-hybrid form. I regard this process not as a hybridisation but rather as a *fusion* of

compositional ideas. New works are created from this process that explore the relationship between the two musical forms in a pragmatic way, the written element of this research aims to document the processes undertaken during this exploration.

As well as the term hybrid, two other compositional approaches that might initially suggest a relationship to the work in the portfolio are plunderphonics and mashup. Plunderphonics is a term used to describe a musical form that is based around the use of pre-existing sound recordings and samples to create new musical works. Mashup is similar in some respects, as it too is based on the use of pre-existing sounds and compositions. Mashup uses samples of other people's music and seeks to create new musical works from the original samples. The thrust of this research, however, is neither of these for a number of very clear reasons. Both plunderphonics and mashup use the original sounds overtly in the final composition, and in doing so create strong links between the new work and the sources that created it. There are many examples of music that use samples and sounds from elsewhere, but are not considered to be plunderphonic or mashup; the Hip-Hop genre is a good example. In the composition of the portfolio associated with this research, samples are sometimes used in conjunction with other composed sounds for their intrinsic and extrinsic musical qualities, depending on the piece being composed and its intended purpose. Samples from various sources were used in the creation of the portfolio, the use of which will be discussed in relation to each piece in chapter three.

The portfolio addresses compositional approaches from acousmatic music and electronica and in doing so extends musical practice. It helps to bridge the divide between acousmatic music and electronica and is presented as an original contribution to the field of electronic music making.

The dissertation is split into four chapters. The first chapter introduces the research and the reasons behind its realisation. The second chapter documents pivotal ideas that pertain to, and are derived from, the composition of the works. These characteristics were identified during and after composition and were not arrived at a priori. The second chapter addresses three distinct areas that relate to the compositions in the portfolio which are: materials, spaces and cultures. Chapter three is a discussion of the works and how their composition

relates to the ideas discussed in chapter two. Chapter four then offers a series of conclusions to the research.

1.0.1 Research imperatives

There is an emerging body of composition and theoretical research that draws from acousmatic music and various forms of electronic dance music. Compositional processes normally associated with acousmatic music can be found in some forms of electronic dance music, and there are a handful of composers who are entering the world of acousmatics from a dance/popular music background. This relatively recent mixture of backgrounds is beginning to describe routes between compositional practices that sit at the fringes of electronic dance music, and forms of music that are composed for the diffusion concert situation, along with their associated acousmatic studio practices. This dissertation documents the emergence and continuing development of a practice within this field by gathering empirical evidence through compositional exploration, music analysis and the investigation of acousmatic music theory and practice. The dissertation will detail practical and theoretical approaches to how the music that exists between these two idioms can be composed, analysed and performed and will document the practical exploration undertaken in the portfolio.

Whilst there are probably a number of genres of dance music that share acousmatic music composition practices, and whose similarities could be described in terms of the theories that accompany the acousmatic canon, the focus of this research lies particularly with music that can be best described as electronica. The term is widely used in the UK to describe a collection of music that emerged in the early part of the 1990s as an extension of techno music. Many artists and music journalists use the term techno in place of electronica[1], and do not regard electronica to be anything other than techno music. But, for the purposes of this dissertation there needs to be some delineation between the first wave of music emanating from Detroit, designed for the dance floor, and other music which was being composed predominantly in the UK during the early part of the 1990s.

[1] Such as Dan Sicko, author of Techno Rebels: The Renegades of Electronic Funk (Sicko, 2010) and bands such as Autechre and Aphex Twin who have described their work as ‘techno’ in various interviews.

To help clarify the line between electronica and techno, Verderosa outlines electronica as:

> *'... a broad term used to describe the emergence of electronic music that is geared for listening instead of strictly for dancing.'* (Verderosa, 2002: p.28)

The important term here is *listening*, and it is this element that this research places significant value on. Music that sits in this category has, at its core, an intricacy and level of detail that is not as relevant in other forms of electronic dance music. Whilst many compositions in the electronica idiom are composed around structures and compositional ideas that are linked with other forms of dance music, a significant point of separation seems to lie with this notion of listening, rather than dancing. It follows that this level of detail and intricacy simply can not be appreciated on the dance floor and its associated social noise floor, and requires from its audience an attentiveness and deeper level of listening engagement.

In the late 1980s and early 1990s, dance music and the emerging UK rave scene produced a collection of music that was conceived purely for dancing. Illegal raves became increasingly commonplace during this period, especially around the M25 and London area, but also spreading to the rest of the countryside[2]. This developing music scene, and its associated recreational drug use, created an unfettered hedonistic music designed for the sole purpose of dancing and pleasure seeking. Steve Beckett, co-founder of Warp records, described how the label responded to this trend:

> *'From our point of view, it also felt like a lot of the dance music around had gotten really throwaway, just white labels from people jumping on the bandwagon to make a quick five hundred or a thousand quid out of it. It felt like somebody should start paying attention to the production and the artwork – the whole way the music was presented.'* (Reynolds, 2013: p.194)

[2] I personally remember a very large Rave taking place on Selsley Common, Gloucestershire UK in 1992 which lasted for several days.

UK electronica can be viewed as a reaction to the ephemeral nature of rave culture that Beckett indicates in this statement. This marks an important turning point in how electronic dance music was conceived and composed, as well as where and how the music was experienced.

When studying at undergraduate level in the late 1990s there appeared to be a social divide between electronic dance music being composed in some academic institutions, and music that existed in youth culture of the time. This is not the first time such a divide has occurred of course, but the important factor that can be perceived is that the two forms of music seemed to exist for similar reasons. As has already been discussed, electronica was not intended solely as music for dancing, but also for listening. This notion is backed up by sleeve art and words contained in Warp Records' initial releases and by interviews with Beckett, who, when discussing the Artificial Intelligence series of albums[3] stated:

> *'That's why we put those sleeves on the cover of Artificial Intelligence - to get it into people's minds that you weren't supposed to dance to it!'* (ibid, 2013: p.194)

As electronica is not conceived primarily for dancing, and contains no lyrics or overt meaning then the perceiver might conclude that electronica is an encapsulation of the idea of art for art's sake. The design and packaging that the music is distributed in is given careful consideration and could certainly enhance this opinion given that album covers are highly stylised and often contain abstract, computer generated or highly processed imagery. The covers were, and in many cases continue to be, almost exclusively devoid of images of the composer(s), the musical equipment used to create the music or any other real world associations. The exception to this is the Aphex Twin who in the mid 1990s went through a phase of using distorted images of his face, often on the bodies of other people, on the covers of his releases such his *Richard D. James* album (1996) and the now infamous *Windowlicker EP* (1999). Music videos that accompanied James' work such as *Come To Daddy* (1997) and *Donkey Rhubarb* (1995) used similar imagery.

[3] Artificial Intelligence was a collection of eight albums bookended by two compilation albums released by Warp Records between 1992 and 1994. It contained seminal albums that helped define the emerging genre of electronica.

1.0.2 High art vs. popular art

Whilst a wider discussion of high and popular art sits outside the scope of this research, there are potentially some considerations in this sub-heading that relate to why electronica and acousmatic music are sometimes seen in opposition, and are therefore used as the main focus of this research. Electronica might be described by some as being 'popular'. An article on the Encyclopaedia Britannica website suggests that popular art is:

> *'...intended to be received and appreciated by ordinary people in a literate, technologically advanced society dominated by urban culture'.* (Encyclopaedia Britannica, n.d.)

Electronica would certainly fit into this category as it is generally received and appreciated by 'ordinary' people in the technologically advanced, urban culture of modern day Britain. The same article goes on to say:

> *'Popular art in general tends to be narrative, to reinforce uncontroversial beliefs and sentiments, to support popular institutions, and to create identity in a social group. It is distinguished by the rapidity of its changes of style, by its revivals from earlier periods, and by its constant borrowings from elite art, folk art, foreign cultures, and modern technology for its song tunes and lyrics'.* (ibid, n.d.)

Electronica seems to fit this statement in places, but does not tally quite so well in others. It could be said that there is a social movement or group that might identify itself with electronica, and the music has undergone a shift in style over the last two decades as a result of technological development and cultural borrowing. But the same could also be said of acousmatic music, which has undergone a shift in style due to recent developments in technology. It might even be argued that there are elements of the acousmatic community who identify themselves by the music as well. However, electronica doesn't support popular institutions nor does it support uncontroversial beliefs or offer any particular overt narrative. It is these elements that make the music exist inside popular culture, but on the fringes of it. Unlike much popular music, which is often driven by

convention and financial gain, electronica pushes at the boundaries of commercialism in a way that conventional popular music does not.

In the Routledge Companion to Aesthetics, Fisher makes clear that there is a distinction between high art and good art and low art and bad art. He offers that it is possible to conceive of high art that is bad, and low art that is good.

> *'One point seems clear: even though high and low read as adjectives of contrasting quality, we should not equate the high/low distinction with a third distinction, that being good and bad art.'* (Gaut & Lopes, 2005: p.528)

He goes on to suggest that we *'...cannot equate high art with good art and low art with bad art.'* (ibid 2005: p.528)

Whilst Fisher was deliberately broad in his assertions, these comments can be aligned with reference to this research and the contrast between acousmatic music and electronica. Joseph Hyde articulated some of these ideas with particular relation to acousmatic music and forms of dance music in his article *Off the Map* (Hyde, 2001). In the text Hyde acknowledges that trying to determine a dividing line between the two forms of music is difficult territory, but the article does begin to cast a spotlight on why the culture associated with the electronica movement in the UK does have significant artistic validity. Hyde offers that the DVD of Ganz Graf by Autechre is *'...possibly the most intricate and cutting-edge digital sound/video fusion I have seen.'* (Hyde 2001: p.38)

Trying to identify why electronica might be deemed as low art is a difficult subject to tackle and remains outside the scope of this dissertation, a subject for the sociologists rather than for a composer. However, it is useful to frame the music in terms of its cultural setting as this will undoubtedly influence how the music is composed.

A little later in his article Fisher discusses a possible set of distinctions between high art and low art as identified by Kaplan in 1972. Many theorists discuss low art as 'popular art'.

> *'Popular art is dominated by a need for familiar forms, an intolerance of ambiguity, a tendency towards easiness and emotional indulgence.'* (Gaut & Lopes, 2005: p.531)

This doesn't seem to relate that well if we label electronica as 'popular art'. Electronica is nothing if not ambiguous and devoid of emotional indulgence, its development was documented as a reaction against the more indulgent or throwaway aspects of dance music in the early 1990s. It could be said that the genre has elements that could be described as familiar, and 'easy' notably the use of rhythm and pitched sounds, but there are many examples of the genre that are either devoid of these or subvert them into unfamiliar forms, some examples of this will be discussed later. It is also true to say that there are plenty of forms of 'high art' music that are constructed from familiar musical material.

In his article *Pleasure Beats: Rhythm and the Aesthetics of Current Electronic Music* (Neill, 2002), Neill outlines his thoughts on what might be the dividing line between high art and popular art in relation to music. Neill seems to relate his ideas to Kaplan and identifies the familiar forms as the rhythmic content of the music. Whilst this idea is probably a little simplistic, Neill does make a strong for how the use of the beat separates the two worlds. This article is explored in more detail a little later in section 1.1.3.

1.0.3 The emergence of electronica

As discussed previously, this research will be exploring the compositional relationships between electronica and acousmatic music. There are many terms which could have been used to describe the musical forms that are being explored, but the term electronica seems to be the most appropriate one to use since it stems from genres such as techno, house, acid house and hardcore and can be related to the many technological developments that became affordable to budding composers during the early part of the 1990s, notably samplers and computers.

Samplers such as the Akai S1000 and Casio FZ1 were launched in the late 1980s but were much more available to up-coming electronica producers in the early 1990s as they came

onto the second-hand market. By today's standards they were not particularly capable devices but for the time they offered a tremendous amount of sound manipulation and processing power. The FZ1 and the S1000 are just two examples of machines used by artists such as Autechre and The Orb who exploited them for their ability to record and manipulate sound. This ability to manipulate and reprocess sound gave these early electronica artists the tools to enable them to engage with Schaefferian ideas of musique concrète and acousmatics and to begin using captured and recorded sound in a musical way though studio montage, processing and sequencing, often triggering samples in rhythmical ways via MIDI with the other elements in the music.

As discussed in a previous article (Ramsay, 2013) the ideas of sound recording, processing and arrangement were not explored as fully in other forms of electronic dance music during this period and it was often the sampler and personal computer that gave composers of electronica the tools they needed to take dance music to new, and arguably more interesting, compositional territory. The article explores a number of examples of electronica that use these compositional ideas to extend the genre and where electronica and acousmatic music began sharing similar territory. Of particular note here is a discussion of recent electronica that simply use samples and field recordings, but compositions that apply structuring processes that are familiar to acousmatic music composers. A example of a piece that relates strongly to this idea is *Internal Clock* (Henke, 2009) from the album *Silence*. An analysis of *Internal Clock* was conducted as part of the *Online Repository for Electroacoustic Music Analysis* (OREMA) (Ramsay, 2012) which employed a selection of acousmatic music composition theory to explore and analyse the work. The same piece is used as a point of discussion in chapter two with regards to the ideas of loss of identity using Emmerson's language grid (Emmerson, 1986). Its relevance here is important as it highlights an example of a piece of electronica that explores compositional structuring based around timbre and the idea of the sound object, rather than around pitches or rhythm alone. The music on this album and the rest of Monolake's outputs could certainly be described as popular art, yet it contains many aspects that are familiar to the world of acousmatic music composition and listening.

1.1 Literature Review

The research is centred around three main strands which are intrinsically linked. These strands relate to how the music in the portfolio is composed and performed and the sociological aspects that are important to this practice. The sub-headings that are used in chapter two that relate to these ideas are:

Materials: The timbres and structures that the compositions are formed from.
Spaces: The spaces used in the composition and performance of the music.
Cultures: Cultural/sociological aspects that relate to both composition and performance.

It is important to make the distinction at this early stage that the focus of this research is on the composition of the music, and not the exploration of sociological theory that relates to composition practice. Any sociological issues will be based on empirical evidence and will be discussed from an observational perspective.

1.1.1 Materials

There needs to be some exploration of the theory of acousmatic music and the acousmatic listening situation in order to identify a starting point for this research.

Acousmatic music

Pierre Schaeffer defined the acousmatic listening situation in his canonical work *Traité Des Objets Musicaux* (Schaeffer 1966). In it he applied the term acousmatic to describe sounds which are 'veiled' behind the loudspeaker and are therefore separated from any source/cause relationships. Through this process, acousmatic listeners are free to enter a state of 'reduced listening', the act of hearing sound for its own sake free from any associations relating to the sound source. The term acousmatic has subsequently been used, some might say abused, to describe a great deal more than this physical listening situation to include a more conceptual way of listening (acousmatic listening), through to a way of

classifying a subset of electroacoustic music. Wishart defines the term ‘acousmatic’ in the following way:

> *‘...acousmatic thus refers to the apprehension of a sound without relation to its source or cause.’* (Wishart, 1996: p.129)

The term also refers to sounds which are concealed in a more general sense, either by exploratory ways of recording and presenting sounds, or by transforming and processing them. *Kits Beach Sound Walk* (Westerkamp, 1989) is a good example of exploratory recording techniques to reveal and enhance source bonded sounds, and uses the microphone as a metaphorical zoom lens to achieve this. The piece uses the microphone and the studio to explore the nooks and crannies of the real world, and in doing so, creates a discourse which traverses from the landscape to the microscopic and back again through the duration of the work. Iain Armstrong used similar ideas in his piece *Matchine* (Armstrong, 2005). *Matchine* is constructed from close miked matches igniting and recordings of distant machines and fireworks. Denis Smalley’s *Pentes* (Smalley, 1974) is a good example of the latter idea of transformation and processing to explore the acousmatic. A central part of the discourse of the work is based around the emergence of the Northumbrian Pipes which are revealed from various processed and transformed versions of the original recording. The tension created by the montage of the processed and unprocessed sounds is visceral and acts as a central compositional construct that the rest of the work is weaved around.

As this research is exploring acousmatic music and electronica, there needs to be some clarification of the term acousmatic to give the portfolio a point of departure. For this reason it seems only right to attempt to define the term. Harrison suggests that the term acousmatic is more useful than the term Electroacoustic because it *‘...can at least be said to have certain characteristics.’* (Harrison 1999a). He goes on to expand on these characteristics, which begins to define his use of the term acousmatic a little more clearly. He suggests that in order for music to be acousmatic, it must be formed from a combination of the following conditions:

> *'- heard over loudspeakers;*
> *- displays an acousmatic intent (not merely a substitute for another listening mode);*
> *- composed on and exists on a fixed medium;*
> *- the physical source (if any) of the sounds is not actually present at the time of listening;*
> *- the source, nature or cause of the sound may be unknown or unknowable;*
> *- the compositional criteria extend beyond what is normally considered "musical"; these criteria may be spectromorphological, referential/anecdotal, or both.'* (ibid 1999a)

In the article, Harrison acknowledges that this is not an exhaustive set of characteristics, but it goes some way to narrowing down what acousmatic meant to him in 1999. This ensures that the term still has some use as a way of defining a set of compositions and listening methods. This set of characteristics also helps to describe acousmatic music as a subset of electroacoustic music, rather than to describe *all* music that is played over loudspeakers.

However, the term acousmatic has come under scrutiny from many researchers and academics in the field, some of whom argue that a dislocation between source and sonification is at the detriment of the music. In *Living Electronic Music* (Emmerson 2007) Emmerson unravels the term acousmatic in the opening chapter of the book and gives a number of examples of composers who have abandoned the idea of reduced listening and its associated theories in favour of including sounds which either tell stories or contain overt use of symbolism and maintain clear links with their source. Emmerson also suggests that certain theories of acousmatics may be flawed, and cites cases where the theories have been abandoned, even by composers and academics who worked closely with Schaeffer. However, far from debunking Schaeffer, in the first chapter of the book Emmerson discusses a way to describe sound type and behaviour which maintains distance from philosophical or conceptual reasoning, as Schaeffer did with his term acousmatic, and focuses on the mechanisms (action and agency) of sound generation itself.

In a conference paper delivered at Sheffield University Andrew Lewis laid down his definition of acousmatic music. This definition contains four key elements, which are:

> *'1. Nothing to see (and we know it)*
> *2. Fixed medium*
> *3. Time structured*
> *4. Gesture driven'*
> (Lewis, 2013a)

The first two points in this hierarchy are self explanatory and are similar to Harrison's criteria of acousmatic music from 1999. Lewis's ideas of *'Time Structured'* seems to relate more to an unfolding discourse rather than simply being structured around the passing of time. In an email conversation with the composer (see appendix), he extended this idea to the following:

> *'Music, at least in the Western art music tradition, is 'discourse', it forms an 'argument' which unfolds over time. Which is to say, to put it crudely, one thing leads to another at (the) right time.'* (Lewis, 2013b)

It could be argued of course that all musical discourse is time structured, whether in the art music tradition or not. Perhaps even the simplest forms of music cannot be structured or have any meaning independently of time. The final point of being *'Gesture driven'* also seems to be related to Harrison's 1999 article, although Harrison's definition is broader in its scope and encapsulates criteria that extends '*…beyond what is normally considered "musical".'* (Harrison, 1999a).

What seems apparent is that there are two sides to defining the term acousmatic. On one side there exists the original Schaefferian approach that establishes the acousmatic as a *situation*. This acousmatic situation can be created by presenting sounds in a manner that removes reference to their source/cause relationships, typically by playing the sounds over loudspeakers, or veiling instrumental performers from the audience, which can encourage the reduced listening situation. The second definition from Harrison et al takes the notion

further and relates more to the acousmatic as a *practice*. This acousmatic practice potentially involves compositional, technical and sound transformation aspects as part of a wider approach to acousmatic music composition and performance.

Concrete sound

A significant aspect of understanding and creating works in the acousmatic realm is a wider appreciation of the terms 'concrete' and what the term was originally intended to mean. Harrison refers to Schaeffer's writings and offers a suggestion for an understanding of concrete as follows:

> *'...it is widely understood that a further dimension of what was 'concrete' about musique concrète was also the method of working and, by extension, the relationship between composer and material: as in sculpture or painting where the artist produces the finished product on or in a fixed medium by manipulating the materials (paint, wood, stone) directly, so in musique concrète the composer is working directly with sound.'* (Harrison, 1999b: p.117)

Dack discusses the abstract and concrete in more depth in his 2002 article (Dack, 2002) which explores the duality of abstract and concrete. The article also discusses the wider philosophical concepts of the French word 'concrète', which is not simply the building material that the English noun concrete might suggest, but rather a way of describing something tangible in a way the English adjective 'concrete' describes. Dack argues that the English noun concrete:

> *'...can distract our attention from a whole range of philosophical concepts. The same is not true in French where "concrète" has lost none of its philosophical importance because when the French refer to the building material the word is "béton".'* (Dack, 2002: p.2)

Dack also documents a pivotal aspect of composing musique concrète with regards to sounds referencing the external world, which has a significant importance on the

composition of the portfolio. Part of the portfolio relies on selecting and extracting reference points from electronica, which will inevitably lead to a potential and sudden shift in compositional focus from the acousmatic to the electronica, or from the concrete to the abstract. Dack summed up this sudden shift in focus in the following way:

> *'Schaeffer correctly identified the problem of "reference to the external world". If sound objects are used which do reveal their causal origins and are exploited by the composer for these qualities, they will have a "double meaning". Their intrinsic sound characteristics will be apparent but so will their reference to a source. It is the composer who must decide whether to choose to abstract features and suppress reference or vice versa.'* (Dack, 2002: p.4)

Composition and arrangement

There have been a number of compositional theories that relate to acousmatic music that have influenced the course of this research and the composition of the portfolio. Part of this research required a theoretical tool that differentiated the two forms of music being investigated. Emmerson's language grid (Emmerson, 1986) was the key to this, and unlocked the ideas of loss of identity which are covered in chapter 2.1.1. It acted as a set of signposts to the composition of the portfolio, and whilst the language grid was not used to drive the portfolio, it was critical to discussing the works within it.

Of particular relevance to the practice being undertaken in this research is the continuum between aural and mimetic discourse and the timbral and syntactic sub-categories of mimesis. Electronica is a genre that is formed largely from abstract syntax, like much other popular music. What sets it apart is how some of the compositions in the genre map to the aural/mimetic continuum and create an extra layer of discourse from this exploration of the language grid. Whether this is conscious or not on the part of the artists in question is not of particular relevance here; the importance is that it can be identified and documented.

In 2013 Emmerson revisited the origins of the ideas that gave rise to the language grid exploring the mimetic a little more and discussed the idea of an *'expanded mimesis'*:

> *'Musical quotation brings with it a new set of pointers and signifiers – not to the 'non musical environment' of the factory sounds of Nono's work or the environmental sounds of Wishart and Parmegiani, but to musical practice itself and its social signification. This is an 'expanded mimesis' which was not followed through at that time.'* (Emmerson, 2013)

The notion of musical quotation can be used to explain a set of compositional methods that can be heard in the portfolio, and are discussed in more detail in chapter three. Musical quotation is used in two of the compositions in the portfolio: *Reload* and *Repeat* both can be explained in terms of their expanded mimesis. There are also other texts that refer to the use of mimetic material which are detailed later in this chapter under the sub-heading Metaphor, Mimesis and Memes.

The starting point to this research projects the hypothesis that there are compositional similarities between electronica and acousmatic music, and moreover that electronica can be explored further as a genre by exploiting compositional structure and paradigms from acousmatic music. Generally speaking the musicians that were instrumental in establishing the sound of UK electronica were not from academic backgrounds. Artists such as Aphex Twin and Autechre were still only teenagers at the time of composing their early works, and any relationships that exist are more than likely not intentional ones. Richard D James (aka Aphex Twin) confirmed this in a BBC Radio 3 interview from 1995 in which he talks openly about the techno fraternity not being influenced by contemporary classical electronic music aficionados such as Stockhausen. Talking about the article *Stockhausen vs. The Technocrats* (Cox & Warner, 2004) on Radio 3's *Mixing It*, James suggested that:

> *'…they were trying to make out that the world of techno had been influenced by Stockhausen and, I don't think it has at all because I don't reckon 99% of techno bods have ever heard of him'.* (Sandall & Russell, 1995)

This research is focussed on what happens when this relationship is deliberate and composed, rather than coincidental.

Spectromorphology

Denis Smalley coined the term 'spectromorphology' in the mid 1980s to explore some aspects of reduced listening laid down by Pierre Schaeffer some twenty years prior. The ideas of spectromorphology are important in this context as they have lead to the specific exploration of compositional structures such as growth processes, the use of gesture and texture as well as various other ideas relating to acousmatic music composition. In the 1997 version of spectromorphology the following quote marked a significant reason to use these ideas of spectromorphology to discuss this research in particular. Smalley asserted that spectromorphological thinking is:

> *'...intended to account for types of electroacoustic music which are more concerned with spectral qualities than actual notes, more concerned with varieties of motion and flexible fluctuations in time rather than metrical time, more concerned to account for sounds whose sources and causes are relatively mysterious or ambiguous rather than blatantly obvious.'* (Smalley, 1997: p.109)

Aligning these ideas with electronica begins to shed some light on some interesting areas. The majority of pieces in the electronica idiom contain the use of notes and metrical time as central compositional elements. However, in some examples of the genre there are other aspects unfolding which can be extracted from Smalley's ideas of spectromorphology; spectral qualities, varieties of growth, motion, flux as well as ambiguous sound sources and causes. These aspects, more than any others, have been a central influence on this research:

> *'Quite often listeners are reminded of motion and growth processes outside music and the terms selected are intended to evoke these kinds of connections.'* (ibid, 1997: p.115)

This sentence summarises what can be heard in some of the sonic material in *Foil* by Autechre from their 1994 album *Amber* (Brown & Booth, 1994). Whilst the piece is structured around rhythmical and pitched material there is another layer that is central to the composition of the work, and contains the narrative and structure for the piece. The

way in which the latter unfolds is familiar to other electronica of the time; rhythmical drop outs, building and developing layers of sound and growing compositional intensity. However, this piece has a structure that is based around a sound that is existing in and moving through space. The use of space is the compositional narrative for this work, as the sound is not simply fixed at a location, but is dynamically moving through space; its motion and growth are deliberately and carefully composed.

This idea of space as compositional narrative was not an isolated example by Autechre. Also in 1994 they produced a remix for the indie band Saint Etienne from their single *Like A Motorway* (Saint Etienne, 1994). The piece, entitled *Like A Motorway (Skin Up, You're Already Dead)*, featured a haunting sample from the original vocals which is manipulated so that it travels around the stereo field. At 2 minutes 40 seconds the vocal disappears to return at around 4 minutes, only this time very distant and panned to the right. This sound moves to the centre of the stereo field and then quickly towards the listener. At its closest point, and seemingly inside the listener's head, the percussive elements return once more, creating a compositional development which is based around the movement of sounds in space.

Autechre have not only composed these ideas in their work, but have gone on to talk about them as well. In an interview discussing the *Quaristice* album from 2008 Rob Brown discussed the use of space as a compositional narrative:

> *'...if we're using effects that are designed to generate reverbs or echoes the listener is going to perceive certain sized spaces, so you can sort of dynamically evolve these shapes and sounds to actually evoke internal spaces or scales of things.'*
> (Brown, n.d.)

Brown goes on to say *'...you can play with it way beyond music and notes and scales.'* (ibid, n.d.)

Whilst Autechre have done very interesting things within electronica, they are not alone in their use of ideas that relate to acousmatic music composition. The Higher Intelligence

Agency & Biosphere produced two albums which employ heavy use of field recordings in their works: these were *Polar Sequences* (Bird, B. & Jenssen, G., 1996) and *Birmingham Frequencies* (Bird, B. & Jenssen, G., 2000). The premise of these two albums is to capture sounds which are local to the artists' home town, namely Tromsø in Norway and Birmingham in the UK. These field recordings acted as the building blocks for the albums and were integral in every way. Whilst the overall discourse of the pieces were not always entirely mimetic in nature, they certainly used a lot of abstracted materials and these traversed an interesting line between mimesis and aurally carried discourse.

The final example here is Monolake (aka Robert Henke) who has already been mentioned in this chapter. The 2012 OREMA analysis of *Internal Clock* (Henke, 2009) explored some of the compositional processes Henke used during composition. In the piece there is a strong gestural and spatial relationship drawn between a stringed instrument being set in motion and a bouncing plastic bottle recording. Whilst these two sounds are not timbrally related, they are drawn together in the piece because of where they exist in space and their spectromorphological behaviour; that of bouncing and coming to rest. This is, of course, not normal in other forms of popular music, and more often heard in sonic art and electronic music designed for the concert diffusion setting.

Metaphor, mimesis and Memes

Adkins's article *Schaeffer est mort! Long live Schaeffer!* (Adkins, 2007) discusses the idea of the sonic meme as a method for charting the *'...rise of the next trend in urban culture as much as the development, or as Simon Waters put it, the hybridization of acousmatic music.'* (Adkins, 2007).

In the article Adkins suggests that developments in acousmatic music, and other electronic music, can be understood by the exploration of the meme. This idea, originally discussed by Richard Dawkins in *The Selfish Gene* (Dawkins, 1989), relates to the transfer of culture behaviour from individual to individual, including between parents and offspring, and within cultural groups. When used in relation to music the term suggests that the composer can borrow, adopt or steal culturally significant material and transplant it direct into new

musical works. In doing so the composer of the new work is drawing links between musical idioms and suggesting alliances that patrons of the original source will, in theory, understand. The interpretation of these alliances by the listener will be dependent on a number of factors from composer skill, the memes being used as well as listener familiarity with the meme and the genre, or genres, being drawn on.

Adkins points to possible sources of the meme, and cites Jan who proposed that the meme, at its most microscopic, can be configured from *'as few as three or four notes'* (Jan, 2000 cited in Adkins, 2007). Adkins goes on to suggest that it is possible to extrapolate this idea out into other musics, and proffers that the meme is useful when discussing a connection between works.

Similarly to Adkins, Demers discusses various aspects of the composition of electronic music and in particular how electronic music uses sound material. Demers describes this as 'metaphor' and suggests that:

> *'What matter in electronica are not the origins of sound so much as the metaphors that portray sound as malleable material, the product of construction, reproduction, or destruction.'* (Demers, 2010: p.14)[4]

Demers goes on to discuss metaphor in relation to electronica in the following way:

> *'While it would be naive to offer a single theory to explain every facet of every electronica genre, I want to talk about how listeners and practitioners hear electronica's sounds as metaphors. These metaphors can link a particular work with a web of external concepts such as the history of other musical works, outer space, the past, or the material on which sound is encoded.'* (Demers, 2010: p.45)

Whilst this is not an exhaustive list, the aspect of this citation that is potentially most

[4] It should be noted here that Demers usage of the word electronica is in the American sense, meaning the sum total of electronic music making, rather than the British usage which is generally focussed around more exploratory electronic music.

significant for this research is the idea of being able to link a style of composition with another using metaphor as a central idea. The word metaphor here can be seen, in some ways at least, as being linked with the meme as discussed by Adkins (Adkins 2007) and with the idea of the expanded mimesis from Emmerson (Emmerson 2013). A selection of works in the portfolio have attempted to identify meme and metaphor as way of creating a fusion between the electronica and acousmatic.

1.1.2 Spaces

Many of the works in the portfolio are constructed with space as a primary compositional tool and will, at some point, have been diffused over a multichannel loudspeaker array. For this reason, diffusion theory and practice has become an important aspect of the compositional research. Barrière's article *Diffusion, the final stage of composition* (Barrière, 1998) discusses the subject with passion and detail, and even though the article is short, it contains some salient thoughts on the subject. Barrière suggests that *'...electroacoustic music is written for three dimensions: left, right and depth.'* (Barrière, 1998: p.205)

It can be assumed that, potentially due to language barriers, Barrière meant two dimensions as left and right can be treated as a single dimension, the third dimension being height/pitch. Nevertheless, her thrust seems to be that acousmatic music is composed with space as a primary element. She goes on to say that *'Electroacoustic music that does not make use of these three dimensions is no more than a poor imitation of instrumental music.'* (ibid, 1998: p.205)

This idea directly influenced new ways of composing and thinking about the music in the portfolio with regards to multi-channel diffusion and spatialisation, and during the studio portion of composition as well. Fundamental differences can be uncovered between more traditional music and acousmatic music with relation to sound diffusion. For example, it can be seen that acousmatic music relies less on pitch and rhythm, and more on timbre and space, and Barrière's words helped to formalise this.

Harrison also mentions that *'...composition and performance are inextricably linked - diffusion being, in effect, a continuation of the compositional process.'* (Harrison, 1999a)

Clearly both Barrière and Harrison not only agree on the importance of diffusion in acousmatic music, but also that diffusion and composition are as important in the completion of a work as is the use of space as compositional narrative.

In addition to the use of space in diffusion, there is a need for some background on composed space in the studio as this is an integral part of the creation of acousmatic music. The use of space is seemingly a common element in the composition of both acousmatic music and electronica. The notion of the 'space frame', as discussed by Emmerson (1999) is a useful starting point. Emmerson laid out a map for the use of space as a tool for composition and described how the composer can use this:

> *'...from a landscape (bounded by the acoustic horizon), part of which we designate an arena, within which we find a stage, upon which we frame an event'.*
> (Emmerson, 1999: p.138)

Figure 1.0 indicates the framing of events within local and field space frames.

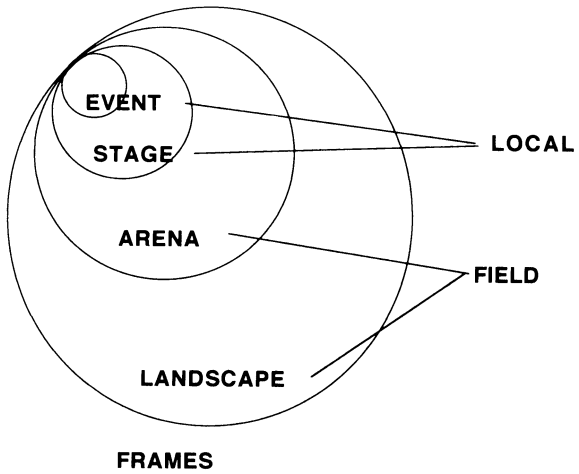

Figure 1.0 Emmerson's local and field space frames (Emmerson, 1999)

In both the 1999 article and *Living Electronic Music* (Emmerson, 2007), Emmerson (1999, 2007) also discusses the super-frame, which relates to the idea of capturing sounds of radio

broadcasts that exist beyond our aural horizon.

> *'At the other extreme, electronics allows 'super- frames' such as the radiophonic soundscapes of Cage's Imaginary Landscape No. 4 or Stockhausen's Hymnen (metaphors, in practice, as the sounds do not as such exist 'out there' in the ether).'* (Emmerson, 1999: p.138)

Emmerson also goes on to suggest that there is further possibility in exploring the microscopic by utilising Fast Fourier Transform and Granular synthesis allowing *'...us to go down to the smallest of particles and even beyond to the individual glitch and byte.'* (Emmerson, 2007: p.97)

Both of these ideas are explored in the portfolio, which will be discussed later in chapter three.

Wishart (1996) discusses some important aspects of space, which relate to this research. These are the ideas of *unreal/real objects* and *unreal/real space*. In the book Wishart proposes that combinations of these can be used inside composition: unreal objects in real space, or real objects in an unreal space, can create an imaginary landscape in the listener. He also indicates that certain combinations of real-objects and real-space can create surreal results, for instance *'...a duet between a howler monkey and a budgerigar or a whale and a wolf.'* (Wishart, 1996: p.146)

1.1.3 Cultures

This section is designed to contextualise the literature relating to examples of where electronica is placed in relation to other forms of contemporary electronic music. It also aims to document recent literature that covers similar areas to this PhD research, and discusses the texts that relate to research that blends, fuses and hybridises genre.

IDM and electronica

An online journal entitled *Dancecult: Journal of Electronic Dance Music* was launched in 2009 (Vol 1, No. 1 Autumn 2009) and has touched on areas that relate to this dissertation. Whilst the journal has grown to focus more on the dance floor than on other forms of electronic music composition, Vol 1, No. 1 does contain an article entitled *IDM as a "Minor" Literature: The Treatment of Cultural and Musical Norms by "Intelligent Dance Music"* (Alwakeel, 2009). This article illustrates how IDM (Intelligent Dance Music, another name for electronica), breaks the traditional popular music conventions of release format, track naming, track length and track composition by using Autechre and Aphex Twin as case studies. The article also includes some criticism of the term IDM and suggests that it is because the music breaks traditions and has no 'unchanging ideal' that the term IDM is not useful as a tool to describe the music:

> *'IDM cannot be hermetically sealed because it rejects authority and conclusion. It refuses to read "past examples [...] as signs of some underlying essence", because there is shown to be no unchanging ideal to which each successive release endeavours.'* (Alwakeel, 2009: p.4)

The article expands on the idea that the genre does not adhere to any unchanging compositional ideal, but also in terms of release format as well. Alwakeel documents that, despite its title, Autechre's *EP7* (Booth, S. & Brown, R., 1999) is too long to be classed as a single by industry rules and that it is actually longer than their 1998 album *LP5*[5] (Booth, S. & Brown, R., 1998).

During the course of this research the terms IDM and electronica were used interchangeably when discussing the work. However, after reading several criticisms of the term IDM it was decided that the term electronica would be used and the term IDM would be dropped. One such criticism was from a 1997 Aphex Twin interview from the online music magazine Perfect Sound Forever:

[5] This is not entirely accurate as *LP5* is around 76 minutes in length with around 14 minutes of silence and *EP7* around 70 minutes with its hidden track.

> *'I just think it's really funny to have terms like that. It's basically saying 'this is intelligent and everything else is STUPID.' It's really nasty to everyone else's music.'* (Gross, 1997)

Autechre also dislike the term IDM and never attempt to hide the fact. From an interview with Barcode magazine in 2008 Rob Brown stated *'I hate that term, when it was coined in the early or mid-nineties, it was already out dated, it was a silly term.'* (Barcode, 2008)

In a recent interview with Autechre on the internet forum *We Are The Music Makers* (WATMM) (forum.watmm.com) there was a question posed to the band which read *"What are the elements of IDM?"*, to which Sean from Autechre replied *"ask someone who makes idm"* (Booth & Brown, 2013).

Electronica's relationship with art music

An article that relates strongly to this research is *Off the Map* by Joseph Hyde (Hyde, 2001). Whilst now some twelve years old, this article discusses a number of topics concerning electronica and electroacoustic music and how they relate directly to the future existence of sonic art. Hyde argues that the Western art music tradition should embrace new forms of sonic art and label them as such: *'Sonic art should perhaps be the broadest of churches, embracing any work that makes interesting and original use of sound.'* (Hyde, 2001: p.38)

This concept might be too broad for some and could encourage a process of 'dumbing down' of the acousmatic tradition to a point where there is nothing left but a hybrid music which, rather than mutually reinforcing its component styles, would produce results which are not as great as the sum of their constituent parts. Hyde acknowledges this process and goes on to say that *'This need not represent a process of dilution, but rather one of (positive) upheaval and reinvigoration.'* (ibid 2001: p.38)
Hyde's article is a useful introduction the subject, and in many ways directly influenced the beginning of this research. However, the article stops short of documenting more

fundamental aspects of how various forms of what Hyde would call ‘good media’ are related. In connection with this chapter’s earlier discussion of high and low art Hyde generally suggests that there are examples of high quality at both ends of the high-low continuum. It could be argued that in order to present a strong case for where sonic art is placed within our culture, it might be wise to look at what links the various disciplines of music together, rather than how they fit, or not, within mainstream media. It is this aspect that the portfolio directly addresses and will develop from where Hyde left off.

Whilst Hyde’s take on the perceived lack of acceptance of electroacoustic music was from an electronica related viewpoint, Darren Copeland tackles the problem from a different aspect. Copeland argues that in order for electroacoustic music to ‘survive’ it needs to embrace a wider audience in a more transparent way, and more often. He argues that by doing so, and not apologising for the music, people will make sense of the ideas in their own way. He goes on to say that *‘if the reaction is negative, then at least attention has been awarded and people have taken notice of something they may not have known about before.’* (Copeland, 2003)

In some way to validate the importance of looking at links between electronica and acousmatic music, Copeland documents a positive example of where these forms of music have been drawn together:

> *‘Another example leads back to my opening comments in that organizations like l’ACREQ in Montreal have expanded the audience for electroacoustic music significantly in their community by collaborating with organizations and groups in the electronica scene and by mixing artists from the academic and club scenes in some events.’* (ibid, 2003)

However, it could be argued that this process may have the opposite effect and devalue both forms of music if careful consideration is not given to aspects such as where the music is scheduled on the bill for the event, and what sort of event was being planned.

From experience running NoiseFloor at Staffordshire[6] University, acousmatic music does not fit well late in the evening, or in a venue that has a high noise floor or sub-standard PA. Copeland's article does not account for these types of factors and assumes that all exposure is beneficial, regardless of whether the context for the music is appropriate or whether the audience will appreciate, or even be open to the experience of the music.

Neill also discusses the high art/low art divide and suggests that there is one overarching distinction between what he calls 'high-art computer music' and 'popular music' and that is rhythm: '*It is the beat that draws the dividing line between serious and vernacular, visceral and intellectual. Pulse equals life equals pleasure.'* (Neill, 2002: p.3)

Neill alludes to the idea that rhythm helps to engage listeners because it helps them to interact with the music, both on a subliminal level, *'Pulse equals life'* and on a physical level through the act of dancing or moving in time with the music. Rhythm also allows the listener to predict the short-term future, and the composer is then able to manipulate this expectation, either by 'rewarding' the listener with the expected outcome or altering this to play with listener expectation. Neill's article suggests that 'popular' electronic music is enjoyed on a physical (primal) level rather than on an intellectual one. These two different appreciations of the music, physical and intellectual, might not be as mutually exclusive as Neill makes them out to be, and it could be seen that they might exist at two ends of a continuum whereby the physical appreciation can lead to the intellectual appreciation through repeated listening. Rather like the theories of acousmatic music mentioned at the beginning of this literature review, where the acousmatic listening situation leads to deep listening, it might it also be said that for many people, physical or emotional enjoyment of a piece can lead to a more cerebral understanding of the work and therefore a natural intellectualisation of it. This is certainly true of music that exists on a fixed medium that has sufficient depth and compositional detail. Neill's final remark in this quote, *'Pulse equals life equals pleasure'* seems to suggest that listening to high-art music is somehow

[6] NoiseFloor is a conference which currently runs at Staffordshire University in the UK and was brought into being by the author. The central theme of the conference is to represent a mixed selection of electronic music from both the acousmatic and electronica communities to explore how their associated practices can inform and support one another.

not a pleasant experience, or, if music has no pulse then it cannot be pleasant to listen to, which seems to be an over generalisation.

Emmerson discusses this topic in detail and mentions that the dualities listed above, physical and intellectual, have a more significant bearing on our interpretation of music: *'This dualistic thinking tends to assume that music has its origin in the earliest experiences of our evolution, namely in the body and the environment.'* (Emmerson, 2007: p.64)

Emmerson elaborates on these dualities and draws parallels between the body and environment and how these indirectly relate to our appreciation of music. He discusses how the time frames of the environment differ from those of the body. He suggests that the environment is made up of both periodic and aperiodic events, which often exist beyond the capacity of short term memory. This process:

> *'...stimulates contemplation and consideration of phenomena beyond our direct bodily control: water (sea, rivers), wind, the seasons, landscape. This contemplation would include degrees of calculation and prediction, depending on the affordance of these phenomena to the observer.'* (Emmerson, 2007: p.65)

So it might be concluded from Emmerson's words that electronica, or beat based music, is in accord with our body patterns and talks to us on a primeval level, whereas electroacoustic music is more in tune with our questioning mind. However, it is important to stress that there is rhythmic discourse in acousmatic music and environmental discourse in electronica, and that is it overly simplistic to characterise each of the genres as exclusively rhythmic and non-rhythmic. It could be added that through repeated listening to rhythmical music, any sense of beat *could* dissolve to afford a type of listening which brackets out the rhythm. This is particularly true if there are other deeper elements in the music that draw the listener in. Emmerson also documents the Schaefferian theory of *sillon fermé* (closed groove) which might support this:

> *'Schaeffer (and later Steve Reich) observed how such regularly repeated sound rapidly loses its source/cause recognition and becomes 'sound for its own sake'* -

> *even words when repeated tend to lose their meaning.'* (Emmerson, 2007: pp.67-68)

So we could apply this theory to music which contains regular repeating patterns and offer an argument which suggests that people who listen to electronica are, perhaps at first listening to the patterns, but are then able to listen to the music as 'sound for its own sake', or sound as timbre, through listening to the repeating patterns in the music.

Landy (2007) has also helped to define the scope of this research, and offered some compositional methods that are exploited in the portfolio. The structure and sounds used in the composition of electronica contain influences from both body and environment, as Emmerson would describe them. However there is another aspect to electronica that Landy might describe in terms of his idea of the *'something to hold on to factor'* (Landy, 1994). This is a mechanism by which listeners can find a route into the work to enable them to explore it more fully. The idea assumes that there is an initial barrier with some forms of sonic art, and the 'something to hold on to factor' helps to break down this barrier offering an easier route into the work which would presumably result in some form of reduced or deep listening taking place. Landy briefly lists some of the things to hold on to:

> *' i. some parameters for a start: e.g., dynamics, space, pitch, and/or rhythm;*
> *ii. homogeneity of sounds and the search for new sounds, e.g., pieces based on one or a few pitches, homogeneous textures, new sounds, and the voice and the special case of a live instrument plus recorded sound;*
> *iii. textures not exceeding four sound types at once;*
> *iv. programmes, some are real but many are imaginary, e.g., nature, recycled music and "anecdotal music," and acousmatic tales; and*
> *v. others not yet discovered.'* (Landy, 2007: p.28)

Finally an important area that has been considered in the composition of the portfolio is Smalley's ideas of the *autocentric* and *allocentric*, as originally discussed by Schachtel (Schachtel, 1959). These two terms are used by Schachtel to describe activity that relates to object-centred (allocentric) or subject-centred (autocentric) perception. Autocentric relates

to the self and one's emotional response(s) to our surroundings; how things make us *feel*. The allocentric describes a perceptive activity that relates to how we perceive the qualities of an object, independently of how we feel about it. Smalley relates these two terms to Schaeffer's four modes of listening and the appreciation of music, and when applied to electronica some important aspects in the understanding of the music become apparent. (Smalley, 1996)

It can be suggested that music that is made for the sole purpose of dancing, techno, drum and bass and house for example, sit more towards the autocentric end of the scale. This does not suggest that nothing can be gleaned from an allocentric approach to listening to the music, but its intended purpose is one of *'celebration, relaxation and entertainment (dance)'* (Emmerson, 2007 p.72), not one of *'serious attention and contemplation, challenge and engagement'* (ibid, 2007 p.72). Electronica, on the other hand, can be seen to have a dual reading when mapped to allo/autocentric perceptual modes, and it is a central suggestion in this research that the music can be perceived and understood by adopting both allocentric and autocentric approaches to its listening and understanding. The music can be understood both in a cerebral and intellectual level. The music contains both cerebral and contemplative content, making it an ideal subject for this research. In an interview with The Black Dog in the sleeve notes of the *Artificial Intelligence II* (Various artists, 1994) album on Warp records, when asked the question *"Why did you contribute to (A.I)?",* they answered *"So that maybe people will SIT DOWN and listen"* (Various artists, 1994). It is worth noting that their contribution, a piece entitled *Parasight*, was heavily beat driven and reminiscent of acid house and techno, but with ambient and textural elements that unfold more gently.

CHAPTER 2

2.0 Materials, Spaces and Cultures

This chapter is intended to document the relationship between the compositional theories discussed in chapter one and how these relate to the wider issues that the portfolio seeks to specifically address. Chapter three will then focus on individual works in the portfolio and will relate their composition specifically to ideas discussed here in chapter two. The role of the second chapter is to document broad issues that relate to the composition of acousmatic music and electronica, and to describe how these issues affected the compositional direction of the portfolio. The evidence provided here details the links that have been identified through both research and compositional practice that traverse the duality between electronica and acousmatic music making. Empirical evidence from the compositions that make up the portfolio will be introduced into the discussion and, where relevant, compositional theories and strategies from both electronica and acousmatic music will be explored. It is worth noting at the outset that there is experiential evidence and documented evidence[7] to suggest that it is not possible to state that *all* compositions in the electronica genre share the same compositional direction, theory or ideal. However, it is possible to suggest that, at its core, electronica is about exploring the possibilities of making music with sound, and in that there is certainly a relationship with acousmatic music practice.

This chapter is split into three distinct areas, which address broad topics that relate to the composition and performance of the works in the portfolio. The section entitled 'Materials' relates to the components of composition; textures, gestures and timbres and how these are organised. The second sub-heading, 'Spaces' is further divided into sections that discuss performance spaces and composed spaces. The section on composed space discusses how electronica and acousmatic music use space as a primary compositional tool, and the section on performance spaces explores where the musics are performed and their relevance in those spaces. The last sub-heading is entitled 'Cultures' and relates to who

[7] Such as *IDM as a 'Minor' Literature: The Treatment of Cultural and Musical Norms by 'Intelligent Dance Music'* (Alwakeel, 2009)

listens to the music in the spaces. This section also addresses how culturally significant sonic material has been explored in the compositions in the portfolio and the relevance of these materials.

2.1 Materials

This first section is divided into a number of sub-headings which relate to global compositional considerations that have been identified through practical and theoretical research. These factors are applied in the portfolio and their specific use is addressed in chapter three. Whilst not all of these factors have been given the same attention in each piece in the portfolio, each area has been explored in one or more of the compositions.

2.1.0 Micro, Meso and Macro-level structures

This document will use the terms micro, meso and macro-level to identify and discuss the sonic content of the works in the portfolio. These individual levels will act as a way to zoom into the compositions and their structures to uncover what is happening inside the works and how they are formed. The micro-level deals with the smallest compositional elements in a work, such as individual sounds, and can be described in terms of their internal spectromorphology[8]. The meso-level is formed from groupings of micro-level sounds at a gestalt level[9]. The macro-level is formed from the meso-level groupings and describes larger scale compositional shape in the pieces.

2.1.1 The Language Grid

Emmerson's language grid (Emmerson, 1986) acts as a pivotal launching point for exploring the relationship between electronica and acousmatic music in the portfolio. Early electronica from the 1990s sits in the top left hand corner of the grid in the abstract syntax, aural discourse domain. Syntax is abstract as the musical information is largely drawn from

[8] As identified and documented by Denis Smalley (Smalley 1986, 1997) and discussed later in this chapter.

[9] The term gestalt refers to the natural tendency to group collections of objects together in order to make sense of them and is based on gestalt theory.

the western musical tradition and is based strongly around rhythm and metre as well as periodic pitched sounds. This is typical of early Warp records artists such as LFO, The Black Dog, Autechre and Aphex Twin. Whilst these artists are known for their frequent use of samples, these samples are used because of their extrinsic cultural references[10], rather than the *intrinsic*[11] qualities of the sounds themselves. This is in contrast to later works of electronica from the early 2000s where samples were being used for their intrinsic properties as well as their extrinsic referential ones. However, this is not to say that early electronica did not use other compositional elements that might be more familiar to the world of acousmatic music. Space and spatial movement play a key role in some early electronica, and even though the music was primarily formed from a syntax that was abstract in nature, rather than being abstracted from field recordings, there were elements of the discourse that were syntactically mimetic, although these were often not key aspects to the composition of the works.

The idea that electronica sits primarily in the top left-hand side of the language grid remains one of the key points of separation between electronica and acousmatic music, and one which has acted as a line of division for this research. The sonic qualities of electronica map to the abstract/aural category of Emmerson's language grid and it can be argued that the reason for this is because of electronica's roots in popular dance music. Electronica is often structured around the use of repetitive rhythms or overt pitched material, and for these reasons works in the idiom can never be classified as purely mimetically carried. If a piece was to explore further towards the mimetic/abstracted end of the language grid, there would be a point at which the music would loose its identity and would become something other than electronica. It is at this point of identity loss that the dividing line occurs and where this research is focussed. This loss of identity is illustrated in figure 2.0. The darker sections indicate the parts of the grid that electronica explored between the early 90s and today, the white sections are where the loss of identity would become apparent.

[10] Which relates to Emmerson's *expanded mimesis* (Emmerson, 2013).

[11] The term 'intrinsic' here is used in relation to Smalley's ideas of spectromorphology (Smalley, 1997) and will be discussed later in the section 2.1.10 'Recorded Sound'.

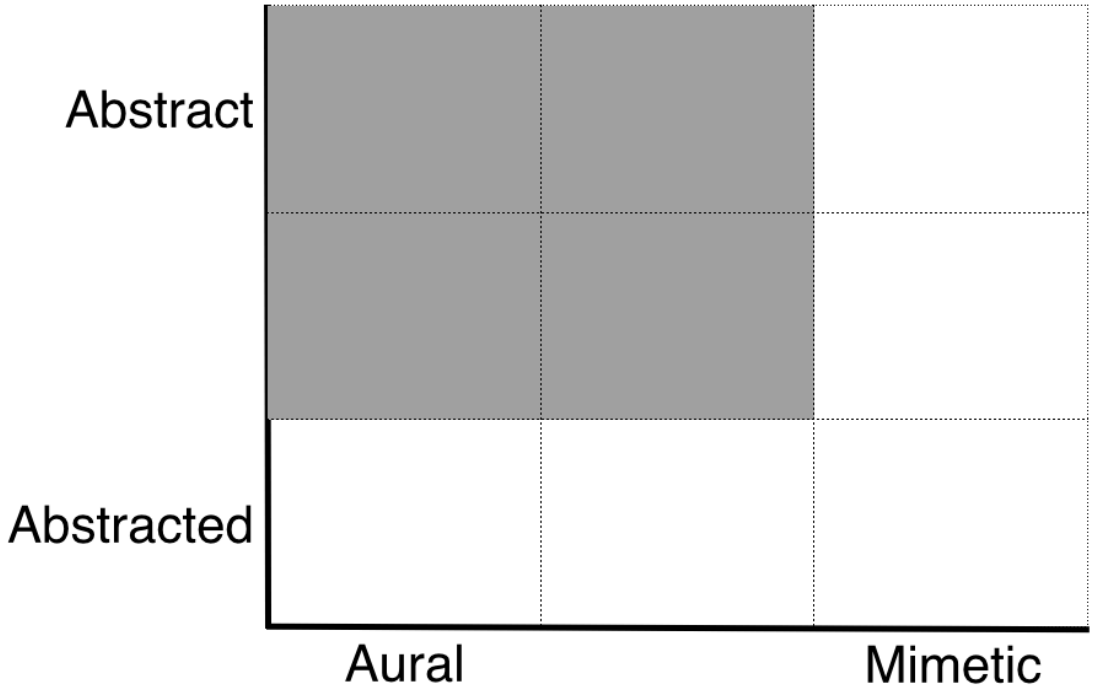

Figure 2.0 Emmerson's Language Grid illustrating where works in the electronica genre sit on the grid.

This loss of identity can also be described in terms of Dack's sudden shift in compositional focus from the concrete to the abstract, depending on the will of the composer to suppress the abstract or to enhance it in composition (Dack 2002). This idea was tackled in the portfolio and has particular reference to the piece *Flinch-Rest* which is discussed in chapter 3.1.6.

It is interesting to note that there is a discernable creeping to the right and towards the bottom of the grid as electronica has developed over the past two decades. Early techno music, which predates the emergence of electronica by three or four years, is confined to the top left corner of the grid, with perhaps some exploration towards the mimetic. The exploration of the mimetic is not especially tangible, but it is documented by some[12] that the futuristic sound and use of regular heavy rhythms associated with techno music is linked to the motorcar manufacturing processes in the automobile industry of Detroit, the city that gave rise to the genre. Whilst the link between the use of futuristic sounds, regular rhythmic structures and the automotive industry is perhaps a tenuous one, it could be

[12] Such as Detroit DJ and producer Stacey Adams in the documentary High Tech Soul: The Creation of Techno Music (Bredow, 2006).

described as being mimetic of the mechanised processes that were used in the manufacture of cars[13]. As electronica splintered from techno and continued to develop through the late 1990s and into the 2000s the music began exploring more mimetic discourses and used more and more abstracted syntax. This can be associated with various technological and ideological changes, which are outlined in the electronica composition section in chapter one.

The lines of division and the loss of identity mentioned previously have brought about two very interesting musical case studies which explore the area at the fringes of experimentation within electronica. The two pieces in question are *Foil* by Autechre (Brown & Booth, 1994) and *Internal Clock* by Monolake (Henke, 2009). These two pieces of electronic music, one example of early electronica and one from more recently, contain a number of interesting aspects when exploring their relationship to Emmerson's Language Grid. When listening to the pieces it is quickly apparent that they are both primarily aurally carried, they are both structured around a 4/4 time signature and contain periodic pitched sounds which adhere to the western musical tradition. However, both pieces contain a discourse which has mimetic properties, and they vary in how they achieve this. The Autechre piece from 1994 uses abstract synthetic elements that have real-world spatial attributes applied to them. This will be referred to as *real-world presence* and it can be identified by audio processing techniques such as the automation of amplitude, reverb, filtering, flanging and phase shifting. Despite the timbre of the object in the Autechre piece being synthetic in nature, and the fact that it is structured around abstract musical syntax, the real world presence that is applied to the sound makes it mimetic of a real world space. The result is a piece of music that is based exclusively around abstract musical material, which results in a combination of both aural and mimetic discourse; not particularly special of the genre at this time. What sets it apart from other works is how it uses the ideas of real-world presence and the techniques associated with spatial movement to explore the mimetic dimension. This idea of real-world presence parameters being applied to synthesised elements affords an additional attribute to explore in the composition of this music, which is in addition to the well-documented use of real-world sounds (field

[13] However, it seems more likely that the use of rhythm provides an uplifting positive experience for both composer and listener alike in a city shattered by urban decay and widespread financial hardship.

recordings) associated with the world of musique concrète and acousmatics.

The other piece that explores the fringes of electronica and was analysed because of its interesting compositional ideas is *Internal Clock* by Monolake. This piece is still primarily aurally carried; it too is structured around a 4/4 time signature with repetitive beats and uses periodic pitched sounds to create melody. *Internal Clock* also contains mimetic elements but, unlike *Foil*, the Monolake piece begins introducing abstracted materials to explore the mimetic discourse. It does this by introducing processed recorded sounds that behave in a way which initially suggests a performance-gesture (Wishart, 1996). These sounds evolve and mutate into a field recording of what sounds like a plastic object bouncing and coming to rest. The build up to the emergence of this unprocessed sonic object is compositionally linked to a performative action with a metal string, which is being set in motion with a similar intervallic structure between strikes. This is illustrated in figure 2.1 and 2.2 where this link can be seen.

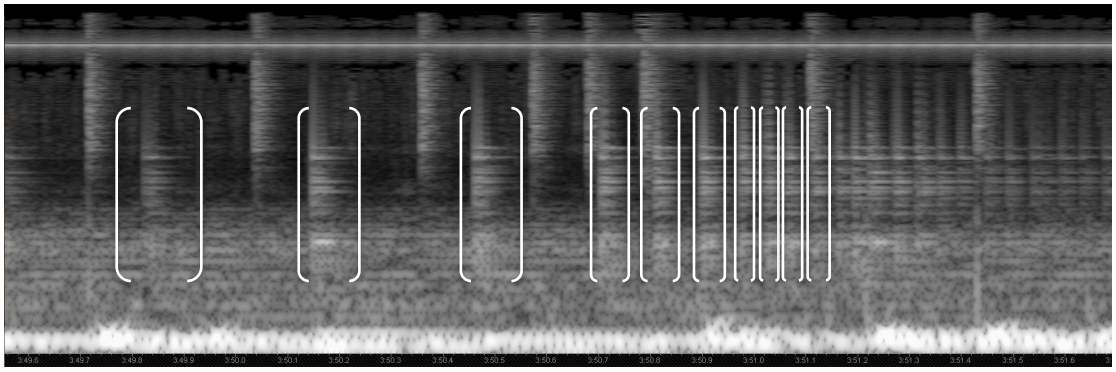

Figure 2.1 Illustrating the metal string intervals which gradually become shorter over a few seconds.

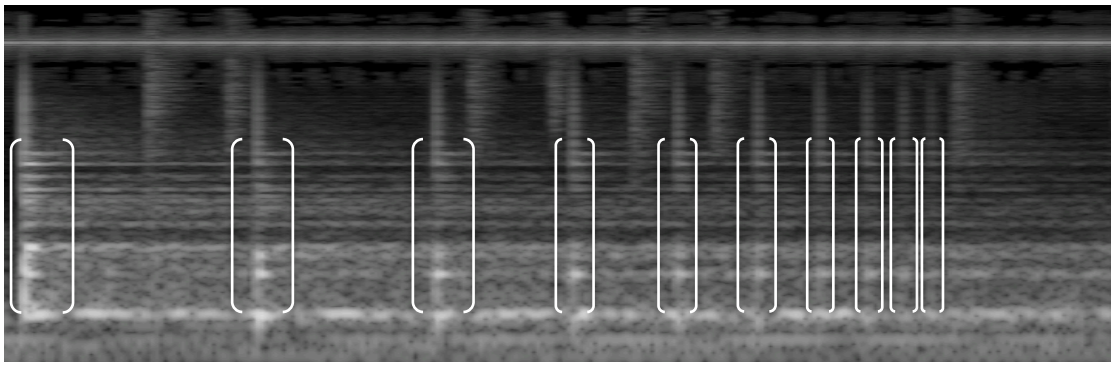

Figure 2.2 Illustrating the plastic object intervals which gradually become shorter over a few seconds.

The compositional link between these two sounds is obvious when listening to the work and it can be clearly seen in figure 2.1 and 2.2. The sounds are temporally similar in their make up as the interval between the pulses are tightening and diminishing in amplitude in both the string sound and the plastic object. This indicates to the listener that the objects have had some initial injection of energy before bouncing and finally coming to rest[14]. It is clear that this compositional construct uses a mimetic discourse to structure elements of the piece, which marks a significant departure from electronica composition of the early 1990s where field recordings were generally used for their extrinsic, referential meaning rather than their intrinsic ones. Electronica from the early 1990s was generally aurally carried and if any mimetic discourse was explored this would normally have been achieved by using an abstract syntax rather than abstracted one.

There are many examples of artists using samples in their work, Richard D. James is well known in these circles for exploring all kinds of sounds, both recorded and synthesized. However, in the early 1990s his compositions used these samples in a predominantly aurally carried discourse, rather than exploring the mimetic. Examples of this can be found on James's *Analogue Bubblebath 4 EP* (James, 1994a) under his AFX moniker from 1994. *Analogue Bubblebath 4* uses recordings of birds and nature, which are arranged into compositions that are primarily aurally carried. Another excellent example of the use of sampling is on *Simon From Sidney* on LFO's debut album *Frequencies* (Bell & Varley, 1991). This is an early example of electronica on Warp Records and, as a compositional break down, the piece uses a sample of what sounds like the 'pop' of a bottle of wine being uncorked. This sample could be described as an abstracted syntactic element but is still used inside a predominantly aural discourse as an additional percussive element.

There are many other examples of electronica artists using this kind of sampling technique, from labels other than Warp Records. However, there is little empirical evidence to suggest any of them explore a predominantly mimetic discourse due to the loss of identity that would occur. It is also worth documenting that tracks such as *Digeridoo* by Aphex Twin, which might initially suggest a tantalising journey into the abstracted/mimetic world are, in fact, a red herring. According to Simon Reynolds (Reynolds, 2013) the track does not

[14] As discussed by Luke Windsor (in Emmerson, 2000)

feature a recording of the aboriginal instrument that the title and imagery on the front cover might suggest, but rather a synthesised recreation. This creates a predominantly aural discourse with some timbrally mimetic overtones but following an abstract syntax; nothing particularly out of the ordinary. If Aphex Twin had sampled the original instrument or used traditional Aboriginal melodies or techniques in the work, then this could have crossed the line into expanded mimesis, but this does not appear to be the case in this example. With Aphex Twin's often mischievous nature in mind, the misspelling of the instrument on the front cover is almost certainly not accidental, and could potentially be a nod to the fact that whilst the instrument used in the track sounds a bit like a didgeridoo, it was probably never intended to emulate the instrument or represent the culture from which it comes.

Emmerson's language grid has been instrumental in the composition, analysis and understanding of the works created as part of this research and has been used to identify where electronica becomes detached from its identity. It has also been used as a tool to uncover key compositional elements that lead to the music being fixed in one area of the grid. New works have been created by identifying the compositional elements that lead to music being fixed in this manner and applying these elements to music which sits at other places on the grid. This research is not directly concerned with exploring the compartments in the top left-hand corner of the grid in a practical sense, these have been explored in prior work by the composer and others in the electronica genre. This research aims to explore the opposing side of the grid, the abstracted syntax: mimetic discourse, and work towards the abstract/aural in order to explore the compositional relationships and encounters that occur. During this process there are compositional, ideological and live performance related factors which come to the fore and will be discussed in turn. In this research, the language grid is used as a way to articulate the exploration of the electronica/acousmatic continuum with additional compositional factors being applied to undertake the creation of the compositions. Figure 2.3 acts as a way to plot the compositions in the portfolio after the event of composition, it was not used as a composition tool at the outset, although it did influence some of the compositional thinking in the later pieces in the portfolio. Figure 2.3 only documents general locations of pieces with relation to the grid, not more complex movements across it.

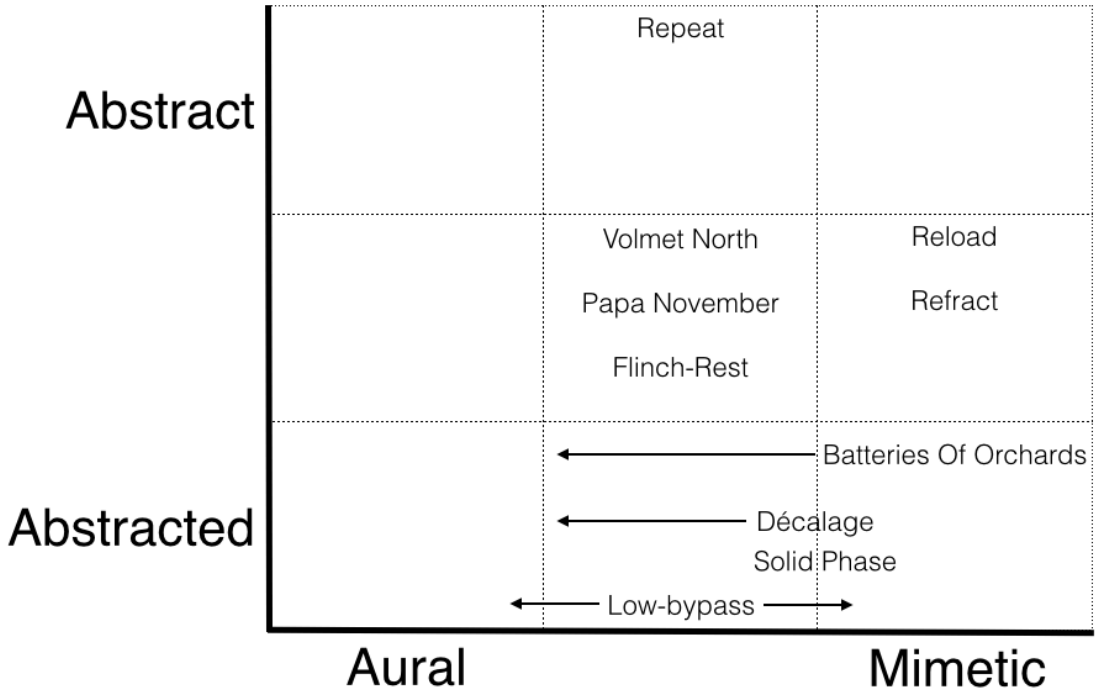

Figure 2.3 The language grid with compositions listed in order of where they map to the grid.

It was found that, rather than sitting at fixed locations on the grid, pieces mutated and meandered as the composition unfolded. This is indicated by the arrows in figure 2.3 which illustrate the general motion or location of individual works, there are other more complex motions that are discussed later in chapter three. This section deliberately ignores the cultural aspect of the term mimesis, as it is discussed later in this chapter.

2.1.2 The dividing line

In reality there are various attributes that distinguish acousmatic music and electronica that are discussed in the sub-headings which follow. However, the ideas discussed above that relate to Emmerson's language grid act as a useful starting point in identifying a line of division between the end of electronica and where acousmatic music begins. From the studies undertaken in the two works of electronica mentioned, *Foil* by Autechre and *Internal Clock* by Monolake, it can be seen that, in relation to Emmerson's language grid, there is a discernable 'creeping' of an identifiable line as technologies and composition practices have developed during the past two decades. This is only part of a wider picture, of course, as there are other dividing lines that this research has played with during the

course of composing the works in the portfolio.

To begin to explore these lines of division the most obvious starting point was to compose music which sits in the opposite corner of the language grid to that of electronica of the early 1990s. As discussed previously, early electronica inhabits the abstract/aural domain and the starting point for this research was to push out from an abstracted/mimetic domain in order to tentatively journey back towards the realm of electronica.

Referring to Lewis' definition of acousmatic music that exists on fixed medium we encounter four key elements that are:

> *'1. Nothing to see (and we know it)*
> *2. Fixed medium*
> *3. Time structured*
> *4. Gesture driven'*
> (Lewis, 2013a)

This definition seems like a useful description of the acousmatic situation, and one that can be used to compare its practice with electronica. Firstly, in performances of electronica there is often nothing to see, for example, when listening to CD or MP3. Electronica was initially conceived as listening music[15] or as some call it *armchair techno* (Reynolds, 2013). The important aspect is that by not bearing witness to a live performance of the work, the listener is often not losing any additional information in the listening situation and therefore the wider appreciation of the music. Whilst electronica performances do occasionally introduce live visuals, virtuosic instrumentation and other performance practices, the value of the music is not lost in translation to fixed medium. As an example, Autechre perform without additional visuals and often perform in complete, or near complete darkness[16]. When considering playback on a fixed medium it can be suggested that electronica does share the 'nothing to see' idea proffered by Lewis. In live performances visuals are used to enhance the performance but are arguably not critical in

[15] As discussed by Steve Beckett, boss of Warp Records, when talking about the sleeve design for the seminal Artificial Intelligence series of albums.
[16] Discussed later in chapter 2.2.1

its appreciation, understanding or enjoyment.

Lewis' fixed medium idea also rings true to a lot of modern popular music. Very little music in the West exists purely in 'live' performance any more, due to advancements and availability of recording technologies and the inevitable mediatisation of the music. Lewis suggests that the importance of the fixed medium is that each performance of the music is identical to the last, and therefore the listener is able to explore the nuances of a work, and in his words 'changes our engagement with sound' (Lewis, 2013a). Brian Eno also discusses this phenomenon of repeated listening (Eno, 2009) relating his ideas to Jazz music, but in principal arguing that: '*What seemed like an almost arbitrary collision of events comes to seem very meaningful on relistening. Actually, almost any arbitrary collision of events listened to enough times comes to seem very meaningful.'* (Eno, 2009: pp.127-128)

In this statement Eno is touching on the ideas of meaning making, which were also discussed by Grayson Perry in the Reith Lectures on BBC Radio 4: *'...art's primary role is not as an asset group and it's not necessarily about urban regeneration, but its most important role is probably meaning making.'* (Perry, 2013)

So both electronica and acousmatic music can be regarded in the same manner when it comes to meaning making. Repeated listening to the same material enables greater engagement with the composition, developing a more intimate relationship with it. What is then heard in the music is not a change in it, but a change in how it is perceived, or an internal change within the listener.

Lewis's idea of *time structured* relates to the importance of the temporal relationships between materials and the composition of an unfolding discourse, which plays out over time. In fixed media acousmatic music this is carefully composed and recreated each time the work is performed. The fixed media aspect plays a particular importance here as the exact temporal relationships between sounds in each performance will be preserved. Lewis offers the contrast of the installation work and suggests that *'a sound installation in a gallery does not usually have a beginning and end. Instead, you turn up when you like,*

wander around, then leave when you decide to.' (Lewis, 2013b). In this example the listeners are able to shape their own experience of the work and the time structuring of the installation is, to an extent, outside the control of the artist. However, there are links that can be drawn here with music that exists on fixed medium and electronica, which also largely exists on fixed physical medium or digital audio file. Not all pieces in the electronica idiom pay as much attention to being time structured as others, but there are certainly examples of works that can be described in these terms. In the pieces mentioned earlier in this chapter, *Foil* by Autechre (Brown & Booth, 1994) and *Internal Clock* by Monolake (Henke, 2009) time structuring plays a key role in the unfolding discourse in the works. This is also true of other works in the genre, such as many other later works by Monolake, but also works on the *Polar Sequences* album by The Higher Intelligence Agency and Biosphere (Bird, B. & Jenssen, G., 1996). This album features a host of tracks that are constructed with field recordings and synthesised elements working alongside each other. A particularly good example of this is the first track on the album entitled *Cimmerian Shaft* (ibid, 1996). This piece begins with a field recording of cable cars, ice and synthetic drones. As the piece progresses it unfolds to reveal a discourse which explores both natural and synthetic worlds coexisting in the piece. Percussive elements are introduced and the field recordings are folded into the mix to create a composition that neither favours nor excludes either the concrete or synthetic. Possibly the closest any electronica act has come to creating a true blend of elements of the two compositional ideas. The duo produced another album some years later entitled *Birmingham Frequencies* (Bird & Jenssen, 2000) which featured a similar compositional approach but used sounds sourced around the city of Birmingham, UK.

Finally, Lewis's fourth element - *'Gesture driven'*. Lewis elaborated on this point in the same email conversation introduced in the literature review: *'One way that we make use of the 'nothing to see' situation is to imply various kinds of physical (or quasi-physical) gestures, causalities, processes and so on.'* (Lewis, 2013b)

As discussed previously, many works inside the electronica canon can be described in terms of their gesture driven properties as Lewis identifies them here. The idea of real-world presence was introduced earlier in this chapter to describe how synthesised sounds

can have real-world attributes applied to them to alter their compositional narrative, and specifically their position or movement in space. In addition to real-world presence and real-world sound there is a need for a third level of real world which describes *real-world behaviour*. Real-world behaviour relates to how sounds unfold through time and can be described in terms of their gestural properties and in particular their *'specific temporal invariants'* (Windsor, 2000); bouncing, breaking, rubbing etc.

A useful text to aid in the exploration of these ideas is *Spectromorphology: explaining sound-shapes* (Smalley, 1997). In this revised version of his original 1986 book chapter, Smalley identifies four layers of gestural surrogacy and it is in the third or remote surrogacies where the composer may start to reinject lost or dormant energy to create real-world behaviours or real-world presence as Autechre do in *Foil*. There are many other examples of this reinjection of real-world properties that it would be inappropriate to begin listing them all here. However, as soon as electronica composers begin concerning themselves with the behaviour and movement of sounds in a quasi-physical space, it can be suggested that they are working directly with gesture as a formative musical structure. Compositions in the genre do this by the use of automated volume, reverb, filtering and flanging effects and so on. At the point electronica composers begin working with these ideas, they cross a line into the realm of acousmatics, and they do so seemingly with increasing regularity.

I have identified four compositional parameters that link electronica with the exploration of real-world attributes mentioned previously. The analysis also explains how sonic elements in the music can be described in terms of these parameters. These parameters were: *Loudness*; *Spatial Distance*; *Spectral Density* and *Cohesion* (Ramsay, 2014). These parameters map to the ideas of real-world presence or real-world behaviour in some way and are used to articulate the evolving of sound over time in electronica. This set of parameters is useful to describe compositional structure in music that is formed from real-world sounds *or* from sounds that have had real-world attributes applied to them.

In addition to Andrew Lewis, another acousmatic advocate, Jonty Harrison has never been anything other than forthright with his views of the acousmatic. He documents an

especially useful description of acousmatic music, as a music distinct from instrumental music:

> *'There seems, then, to be a fundamental distinction between (much) acousmatic music and (much) 'instrumental' music: in the former, the organic properties of sound objects translate into organic gestures articulating organic structures; the latter tend towards architectonic structures. The former grows, mutates, evolves, permitting a certain fluidity and flexibility in the final aural manifestation of the sound (along the lines of Varese's thinking on the development of crystals), thereby permitting diffusion the possibility of further expanding the underlying argument. Architectonic form, by contrast, is measured – a projection of dimensions, values, measurements, entirely capable of conceptualisation away from the sound (and the studio) itself, and less amenable to moment-to-moment reshaping in performance.'* (Harrison, 1999b: p.125)

Even though electronica does not fit very well in the box of 'instrumental' music, it neither fits the description here of acousmatic music either. A series of diffusion experiments were undertaken on the NoiseFloor diffusion system, illustrated in figure A1.0 in the appendix. These experiments were conducted on more regular dance music works, including works at the more experimental end of the spectrum, and they did translate particularly well to the system, although not entirely for the reasons Harrison discusses here[17]. It was found that pieces with strong spatial characteristics, or pieces that were largely textural in nature worked well. However, the fixed elements of the largely beat driven tracks presented more of a challenge on this particular system. Trying to move the fixed elements around the system simply did not make compositional sense, rendering the diffusion situation irrelevant for these types of works on this system. Even though many works in the electronica genre can be composed with real-world presence and real-world behaviours as structural components, they are often formed around central fixed elements, such as repeating static rhythms and other non real-world material, which means that in diffusion they might not as effective on a particular set up. So, whilst there are some compositional

[17] A test was established by setting up a diffusion system of 18 loudspeakers, a diagram of which can be found in the appendix figure A1.0.

crossovers and shared values between the two idioms, in performance it seems there are still some challenges, and a diffusion system arranged in a two channel format in front of the audience, rather than around it, might be more of a logical approach.

2.1.3 Gesture and texture

Gesture and texture are dealt with in the portfolio directly as compositional building blocks and their use stems from the ideas discussed by Smalley (Smalley, 1997). He discusses the idea of gesture and texture as forming principals and delineates between sounds that seem to exist on two different time-based levels: *'The notion of gesture as a forming principle is concerned with propelling time forwards, with moving away from one goal towards the next goal in the structure – the energy of motion expressed through spectral and morphological change.'* (Smalley, 1997: p.113)

Some of what can be heard in electronica composition can be described in terms of the gestural content of the music. At the micro-level, pieces are formed from percussive elements such as synthesised or sampled drums, synthesised lead lines and other short, percussive gestural sounds. These micro-level sounds regularly form loops at the meso-level which could be described in terms of their gestural shape and forward motion through time; such as growth, depletion, development, compositional resolution and so on.

At the other end of the spectrum there are pieces in the electronica genre that could be described entirely in terms of their textural content which Smalley might describe as '*texture-carried'* (Smalley, 1997). An example of a texture-carried electronica would be Autechre's *VLetrmx21* from the *Garbage EP* (Booth & Brown, 1995). This piece is just short of eight and a half minutes in duration and is composed around a repeating phrase of six notes which are gradually filtered and shaped through time to create the compositional structure. Other examples include *Dissolving Clouds* by Biosphere from his 2006 album, *Dropsonde* (Jenssen, 2005) and many of the works from Aphex Twin's *Selected Ambient Works Volume II* album such as *Rhubarb*, *Grass* and *Match Sticks* (James, 1994b).

Like many other musics, there are examples of electronica that contain a mix of both

gestural and textural material. These can, and often do, exist in different physical spatial locations. Emmerson suggests that these can be used paradoxically to create a surreal sense of *'space frame play'* (Emmerson 2007) which will be explored later in this chapter (2.2.0 'Composed Space').

The idea of gestural surrogacy plays an important role in discussing and analysing the compositions in the portfolio, as well as relating to the wider ideas of electronica composition in general. As Smalley argues, '*Until the electroacoustic medium arrived, all music was created either through forms of vocal utterance or through instrumental gesture. Sound-making gesture is concerned with human, physical activity which has spectromorphological consequences: a chain of activity links a cause to a source.'* (Smalley, 1997: p.111)

This is significant because there are now other forms of electronic music that are also devoid of a physical human agent creating the spectromorphologies. However, potentially more interesting is the advancement in technologies that allow the human agent to re-engage with creating and manipulating the spectromorphologies in a new way, on a larger stage and often not in real-time. Before the technological advancements that allowed the recording of concrete sounds the human agent was only able to undertake a physical activity on an instrument or object to produce sound. The electroacoustic medium allowed the composer to begin working with sounds that are related to the physicality of the world, including the use of space as a compositional construct. Contemporary composers have more open access to audio processing tools that enables them to re-inject energy into sounds that have never existed in space, to create movement and gesture, and to take a sound from one physical state or location and transplant it into an entirely new one. Electronica explores this idea by taking synthesised sounds that have never existed in the real-world, placing them in space and giving them motion by re-injecting energy into them.

2.1.4 (Re)injecting energy

Many of the works in the portfolio can be thought of as studies in composing with energy as a central compositional construct, where sounds and their behaviour relate to Newtonian

laws of physics. The portfolio element of this research has identified and addressed two central concepts with regards to the injection or reinjection of energy. The rest of this dissertation will refer to these concepts as *spatial energy* and *gestural energy*. These two forms of energy have significant bearing on two compositional parameters discussed earlier in 2.1.1 and 2.1.2, which are the ideas of *real-world behaviour* and *real-world presence*. Gestural energy leads to the understanding of real-world behaviours, and spatial-energy leads to the ability to address real-world presence inside a musical work. When addressing spatial energy the composer is working with spatial aspects of sound such as those discussed in section 2.1.1 namely amplitude, reverb, filtering, flanging and phase shifting. When manipulating gestural energy the composer is addressing the relationship of sounds, and how they are related inside a composition. This can be adequately explained by aspects of spectromorphology that discusses *first-order*, *second-order*, *third-order* and *remote surrogacy*.

The various examples of electronica that have been discussed previously can be examined in terms of their inherent gestures and gestural surrogacy as can the music in the portfolio. For example, there are many pieces of electronica that are formed directly from instrumental gestures, such as plucked, bowed or struck instruments and objects. Many of these examples are not physical instruments at all but are synthesised. As Smalley discusses in his article, even though these are not 'real' instruments their place in second order surrogacy remains:

> *'Much music which uses simulation of instrumental sounds can also be regarded as second order since, although the instrument may not be real, it is perceived as the equivalent of the real'. Commercial synthesizer usage is of this type when we recognise both the gesture involved and the instrumental source simulated.'*
> (Smalley, 1997: p112)

An interesting example of this is *Live Room* by Tim Hecker from his 2013 album *Virgins* (Hecker, 2013). This piece uses a recording of a piano, overtly under processed at the beginning of the track, with some added reverb giving it some spatial characteristics. This piano sound is very much sitting in the second-order surrogacy, as some performance skill

is evident along with being strongly source bonded. Spatial energy is injected into the recording as the piano moves closer to the listening position, reverb is reduced and amplitude is increased to add to the movement. As the piece unfolds the piano recording has reverb applied in increasing amounts and the wet/dry balance slowly moves in favour of a fully wet signal at lower amplitude to complete the fade into the distance. Whilst the sound remains in the second order, and its gestural energy remains constant, its movement is a result of an injection of spatial energy to give the sound movement and compositional structure which is reminiscent of real-world behaviour.

This example is in contrast to a piece of music that manipulates gestural energy for compositional purposes but leaves spatial energy unchanged. This type of compositional approach could, for example, use a field recording of a non-percussive sound and arrange it based on a rhythmical grid. An example of this practice is *Happy Cycling* by Boards of Canada from their *Peel Sessions EP* (Eoin & Sandison, 1999). This track uses a sample of a gull, which is sequenced at rhythmical intervals but its location in space remains fixed. A contrast to this approach will be addressed later in chapter three when discussing certain pieces in the portfolio. These examples used compositional structures that were created from textures extracted from processed rhythmically dominated material in various forms.

2.1.5 Growth and depletion – compositional structuring

Whilst some of the compositional aspects discussed in the previous sub-headings relate to musical development and deal with how compositions unfold in time, it is worth discussing some specific ideas relating to factors that directly affect growth and depletion and therefore affect composition structure at meso and macro-levels. Previously, section 2.1.2 introduced four compositional parameters that can be used by the composer to shape pre-existing sounds using collections of plugins and other software tools. These four parameters are: *Loudness*, *Spatial Distance*, *Spectral Density* and *Cohesion.* These were discussed earlier in terms of how they are coupled with real-world behaviour and real-world presence and how the composer can imply movement and compositional shape by injecting new energy and motion into the material. However, undertaking such practice the composer is, by definition, dealing directly with structural aspects of composition. The

parameters can be employed individually by the composer, or can be combined to characterise increasingly complex compositional motion and growth. This motion and growth is adequately defined by Smalley's *'Motion and Growth Processes'* (Smalley, 1997) a diagram of which is included in figure 2.4.

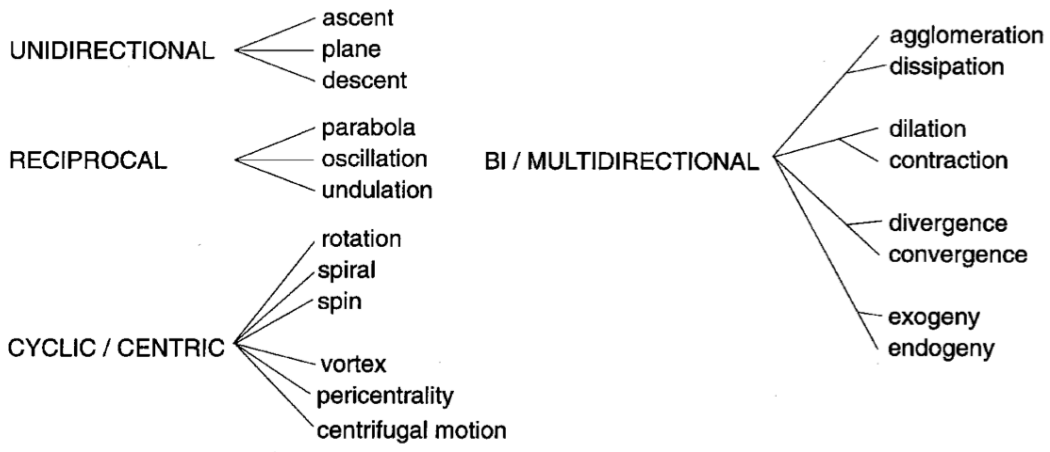

Figure 2.4 Taken from *Spectromorphology: explaining sound-shapes* (Smalley, 1997) showing Smalley's illustration of motion and growth processes.

Whilst Smalley discussed these in relation to electroacoustic music, they are important here as they can be artificially recreated in the studio by using the four parameters listed previously. These can be used in a variety of music idioms, and further to this, electronica can be composed and analysed using these four parameters to create structural functions that are akin to acousmatic music. Whilst the musical material that is used in electronica might not naturally lend itself to being analysed in terms of theory that relates to acousmatic music, it is the inclusion of such ideas that allow it to cross the divide between art music and popular music, and possibly one of the key elements that links the two musical forms.

To test the usefulness of Loudness, Spatial Distance, Spectral Density and Cohesion they were employed in an analysis of Foil by Autechre (Ramsay, 2014). The four parameters were combined in a table, which can be seen in Table A1.0 in the appendix. This table indicates phases of growth, depletion, stasis and termination. The original illustration of

these four parameters and how they map to the piece being analysed is also included in the appendix in Figure A2.0.

An important aspect in the arrangement of electronica, especially early forms of the genre, is the use of layers which are introduced and stacked to create structural and compositional development. This method of arranging material can be found across most forms of electronic dance music where the layers are formed from rhythmical loops, phrases, lead lines, bass lines, individual percussion and other more exotic sonic material and sound effects. The individual layers in a typical piece of electronica can be described as the meso-level, which are then composed together to form the macro-level. Figure 2.5 illustrates this idea where time is on the horizontal X axis and the layers are indicated on the vertical Y axis.

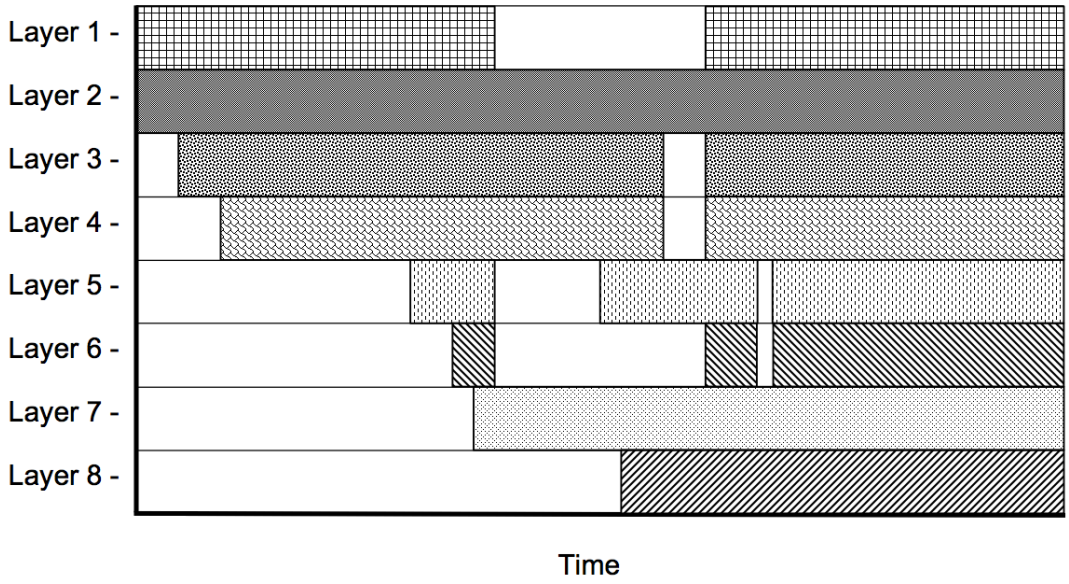

Figure 2.5 illustrating a typical meso and macro-level structure of a piece of electronica, in this case from Autechre's *Foil* from the 2014 analysis (Ramsay, 2014).

The contents of each layer must adhere to the same motion and growth characteristics to be considered part of the same layer, otherwise they should be split into separate layers for analytical purposes. For example, if a collection of percussion sounds begin at the same time, as a drum loop might, and are processed and arranged as a collective then they can be labelled as a single layer. If, on the other hand, a collection of sounds are introduced together but elements of that layer drop out or are introduced later they must be dealt with

as distinct layers in order for the analysis of structure to be an accurate depiction of events. A typical piece of electronica might be formed from between 8-10 layers of distinct sounds or collection of sounds. The more layers a composition is made from, the more complex the arrangement will be.

2.1.6 Dynamic range

A central difference between acousmatic music and electronica is the listening situation; how and where the music is experienced. This aspect is discussed from the listening/performance perspective later, but the performance situation has significant bearing on the composition of the music and how dynamic range is used in particular. Generally speaking, electronica is composed and mastered for commercial two-channel listening situations such as MP3, CD, Vinyl, Hi-Fi, club PA (in the DJ situation) and radio broadcast. The listening situation for electronica remains largely uncontrolled by the composers and so the music has to translate well on all of these formats and systems. In most cases this results in a reduction in dynamic range in the mixing and mastering stages to account for this variation. However, it is worth indicating here that dynamic range in electronica is generally treated more carefully than in other forms of dance music[18].

By contrast, acousmatic music is generally performed in carefully controlled listening situations, utilising high quality loudspeaker diffusion systems in spaces with very low noise floors. It could be argued that, unless the music is performed in this kind of space, on this kind of system, the performance of the music is missing a crucial element as its nuances may be lost. This key difference in performance results in two forms of music which treat dynamic range very differently. One of the basic performance practices associated with the concert diffusion situation is the emphasis of dynamic range. Harrison discusses this and states: *'...I would, at the very least, advocate enhancing these dynamic strata – making the loud material louder and the quiet material quieter and thus stretching out the dynamic range'.* (Harrison, 1999b: p121)

[18] As discussed in the forthcoming book chapter on electronica which compares electronica and techno music mastering (Ramsay, 2014)

In the same diffusion experiments that were discussed in section 2.1.2, pieces of electronica with reduced dynamic range were found to be more of a challenge in the diffusion performance environment available. Pieces that lack dynamic variation can not be enhanced in the way that Harrison discusses above, but this does not mean that diffusion of such pieces is irrelevant. Electronica works best in situations where performance tools, software and/or hardware are used to build, shape and control layers of sound in real-time. The fixed media concert and the real-time electronica gig differ a great deal, and at the root of this difference is the way in which the musical material is composed and mastered. However, there are still some interesting areas to explore between these musical forms with regards to how the music is performed, although this is outside the scope of this particular research.

2.1.7 Recorded sound

The use of field recordings in the portfolio is extensive and varied. There are two main drivers for the use of recorded sound that relate to the extrinsic and intrinsic qualities of the sounds. These considerations influence how the sounds are captured, why they are captured and how they are subsequently processed and transformed. The extrinsic qualities of the sounds, namely their cultural significance and any meaning that they may convey, will be discussed later in section 2.3. This section is focussed on the materials themselves and their intrinsic properties, rather than any extrinsic significance they may or may not have.

During the creation of the portfolio, four compositional parameters were identified that relate to the capture and subsequent treatment of field recordings. These four compositional parameters subsequently allow the composer to work with a *spectrum of abstraction* to create a conversation between the duality of abstract and concrete, as discussed by Dack (Dack, 2002). The four parameters were: *sound source*, *microphone placement*, *sound processing* and *sound spatialisation*. These individual aspects contain dualities that were used to aid the recording, processing and spatialisation of sounds in order to create a variety of sonic transformations. Through this process, the composer is either encouraging ambiguity or preserving real-world aspects of the sounds being treated.

In all four examples one end of the duality will contain sounds that are strongly source-bonded, and the other will contain sounds that are ambiguous. It would be useful to discuss each of these four aspects in turn.

Sound source

The dualities in the first aspect, *sound source*, relate to the selection of either familiar sounds or unfamiliar ones. An example might be a recording of birds or church bells at one end of the spectrum, and a recording of ice melting at the other. The important factor to consider is that one end of the spectrum contains common, every-day sounds and the other contains sounds that we have had little or no exposure to. Another consideration is the way in which the listener experiences everyday sounds. Many day-to-day sounds, such as birds or traffic, are heard so often that they no longer need to have a physical manifestation of the cause in order for it to produce a strong visual representation in the listener's mind. Sounds of this nature are culturally localised, but can be experienced in an acousmatic way and still maintain a strong sense of source bonding. This was used as a way to guide the selection of sound for a composition.

Microphone placement

Microphone placement is an extension of *sound source*. Sounds that are miked in a way which listeners would normally perceive them, i.e. from a distance, are more likely to be recognisable to the listener and are therefore likely to possess a stronger sense of source bonding. In contrast to this, sounds that are closed miked contain less familiar information and are likely to maintain more ambiguity. In this regard it could be said that microphone placement can relate directly to Smalley's gestural surrogacy (Smalley, 1997). In the recordings undertaken for the portfolio it was noted that there was an increasing ambiguity between source and cause as the microphone was moved closer to an object. More experimental microphone techniques would come under this category as well, such as the use of contact mics, hydrophones, VLF devices[19] and ultrasonic microphone techniques[20].

[19] VLF (Very Low Frequency) devices such as Stephen McGreevy's WR-3 can be used to capture frequencies from 0.1 - 10 kHz. More information can be found on McGreevy's website http://www.auroralchorus.com.

Sound processing

This category is related, in some respects, to microphone placement and again addresses Smalley's surrogacy (ibid, 1997). As a sound is processed, depending on the technique being used, it can become increasingly remote from its source and therefore more ambiguous in nature. There have been various processing techniques used in the portfolio from granular synthesis, convolution, phase vocoding, pitch shifting, reversing and spectral processing. All of these audio processing techniques can progressively remove a sound from its source as the processing becomes more extreme.

Sound spatialisation

This final aspect relating to the use of field recordings addresses how the recordings are treated in terms of their spatial properties. So far it has been shown that sounds can be either recognisable or ambiguous. Some might label this duality as concrete at one end and abstract at the other (Dack, 2002). It is possible to extend this idea into concrete and abstract spaces, and it is this area that the spatialisation aspect seeks to explain. Through processing, it is feasible to take a sound from its own concrete space and place it in an abstract one, or to take a sound from one type of space and place it in another. It is also possible to give a sound spatial movement outside the realms of normal physical possibility. An example is a field recording of an insect that is then placed over a large diffusion system and given motion and spatial characteristics that were not present in the original recording. This specific idea will be discussed in chapter three in relation to a piece in the portfolio entitled *Batteries Of Orchards.*

2.1.8 Use of beat, pulse and metre[21]

It is evident that, in many cases, electronica is composed around beat and pulse as fundamental building blocks as many pieces contain heavy use of drums and other

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[20] Using an ultrasonic microphone to record frequencies above the natural range of human hearing, which are then transposed into the normal auditory range.

[21] The use of the terms beat, pulse and metre here is drawn directly from western music theory that defines metre as a collection of pulses, and pulses as a collection of beats. Beats are the basic unit in the measurement of time.

percussive sounds arranged in loops and rhythmical phrases. However, there are instances where electronica is devoid of any beats or overt rhythmical content, but maintains a strong sense of metre; *Rhubarb* by Aphex Twin (James, 1994b) and *VLetrmx21* by Autechre (Booth & Brown, 1995) were both examples mentioned previously. Many acousmatic works also contain metric structure and so it seems that there is a potential relationship between electronica and acousmatic music in this regard. As indicated previously, many pieces in the portfolio are structured around energy as a central construct, but on top of this there is an underlying, often subtle, use of metre in many of the works as well. At the other end of the portfolio there are examples of music which use more overt pulse and beat which attempts to draw together the use of rhythm and energy as central compositional constructs. It has been in these examples that the fusion discussed in chapter one has been particularly well realised. Individual examples of this will be discussed in chapter three.

Chapter one introduced some of the literature that relates to the discussion between high art and popular art. In particular Neill's article suggests that, in theory, the use of the beat is the central dividing line between high and popular art, but in practice this has not proved to be the case. There are a selection of pieces in the portfolio that have been structured around the use of beats and rhythm and have been selected for performance at both national and international concerts and conferences, and programmed alongside other acousmatic works which are recognised as 'art music'. Perhaps in 2002, when Neill's article was penned, the divide between acousmatic music and music made with beat and pulse was more pronounced. Some twelve years on this does not appear to be as much of a concern as Neill's article suggests, and indicates that the dividing line between high art and popular art, in practice, might have shifted in certain schools of thought.

2.2 Spaces

The second section is divided into a number of sub-headings that relate to composed space and performance space. This section acts as a bridge between compositional and sociological aspects that are explored in the portfolio.

2.2.0 Composed Space

There are a number of ideas that relate to the use of space inside composition which were addressed in the literature review in chapter one. The intention here is to discuss how these ideas have been used in composition.

Within the collection of works in the portfolio there is a tangible dividing line when relating the use of composed space in two channel and multichannel works. This dividing line can be seen to relate to the wider differences between electronica, composed mainly in two channels, and acousmatic music which is composed in a number of channel formats. It also became clear in the composition of the portfolio that the final performance method affected how the music was composed, and held significant bearing over the compositional considerations that are explored in the creation of the works. During the composition process, a great deal of importance was placed on how the pieces will work in the diffusion concert setting, and all of the pieces in the portfolio had this as a primary driver for how they were composed. As well as spatial aspects, consideration was also placed on elements such as the use of wide dynamic range, greater emphasis on spatial development and motion as well as enhanced use of spectral density; creating sparse sections and dense sections to allow for greater exploitation of the multichannel diffusion environment. The two channel works were composed for this medium to allow for easier translation between the diffusion concert situation and distribution on other more commercially accepted formats such as radio broadcast, CD, MP3 and so on. At the same time as making the works translate between systems, they were composed in a way that allowed them to be enhanced in diffusion using the strategies mentioned.

During the creation of works in the portfolio, the approach to composing and working with space took one of three routes. These were either:

1. Compose in two channel with consideration for multichannel diffusion.
2. Begin composition in two channel and then through compose to multichannel.
3. Begin composition in multichannel using multichannel recordings.

It was discovered that the pieces that adopted the second route required further compositional consideration when moving from two channel to multichannel, and in all cases required additional material and reinjection of energy to fully explore the spatial aspects of the medium. There is an additional aspect that binds these three routes together, which relates to ideas addressed by Barrière (Barrière, 1998) and Harrison (Harrison, 1999a) which are discussed in chapter one. This is the notion that diffusion is the final stage of composition, although it was found that multichannel and two channel pieces present different compositional choices during diffusion. The multichannel works in the portfolio were generally easier to control as they required a greater consideration for emphasis of gesture as the spatial aspects were largely pre-composed. It was found that the two channel works required consideration for both gesture *and* spatial aspects to ensure their effectiveness in the multichannel setting. Both two channel and multichannel works required the control of image and expansion of dynamic range which are discussed later in section 2.2.1.

Emmerson's idea of the space frame (Emmerson, 1999 & Emmerson, 2007) was used when considering some spatial aspects of the composition process, which relates to both acousmatic music and electronica. In the composition of the portfolio, frames were used as *'objects for musical discourse'* (Emmerson, 2007). As previously discussed, a compositional element sometimes heard in electronica is the movement of objects in space. This idea was referred to previously as *real-world presence*, and relates to the movement of sounds through the space frames discussed by Emmerson. The Autechre interview previously discussed in chapter 1.1.1 is relevant here as well as the fact that Rob Brown (Brown, n.d.) from the band discusses the use of space as a compositional narrative. It is the movement of sound objects across these space frames that gives rise to the sound gaining real-world presence and the subsequent emerging narrative.

2.2.1 Performance Space

Within electronica there are many different approaches to live performance. Many performers supply additional visual information to accompany the music in the form of visual projections, lights and physical objects that are incorporated in to the set design. An

example is Amon Tobin whose 2011 *ISAM* tour saw projection mapped visuals on an abstract cube sculpture, which formed his stage; Tobin himself was performing from within the sculpture. Figure 2.6 is an illustration of this set design, Tobin is situated in the orange box in the middle of this.

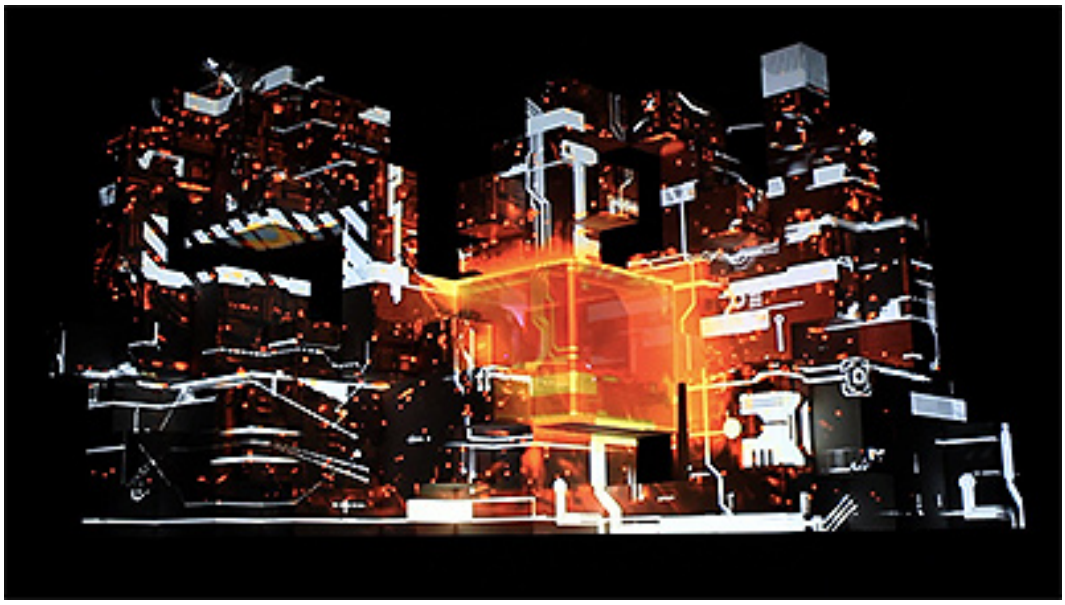

Figure 2.6 Amon Tobin's set design from his 2011 *ISAM* tour. Image taken from http://www.thespacelab.tv/spaceLAB/Images/theSHOW/AmonTobin-01-wide.jpg

Another example of a band using extra visual information is Nine Inch Nails who were using a stage sized controller in their 2008 *Lights In The Sky* tour. This controller enables band members to input notes to a step sequencer during their shows. Figure 2.7 is an illustration of this sequencer used in the tour.

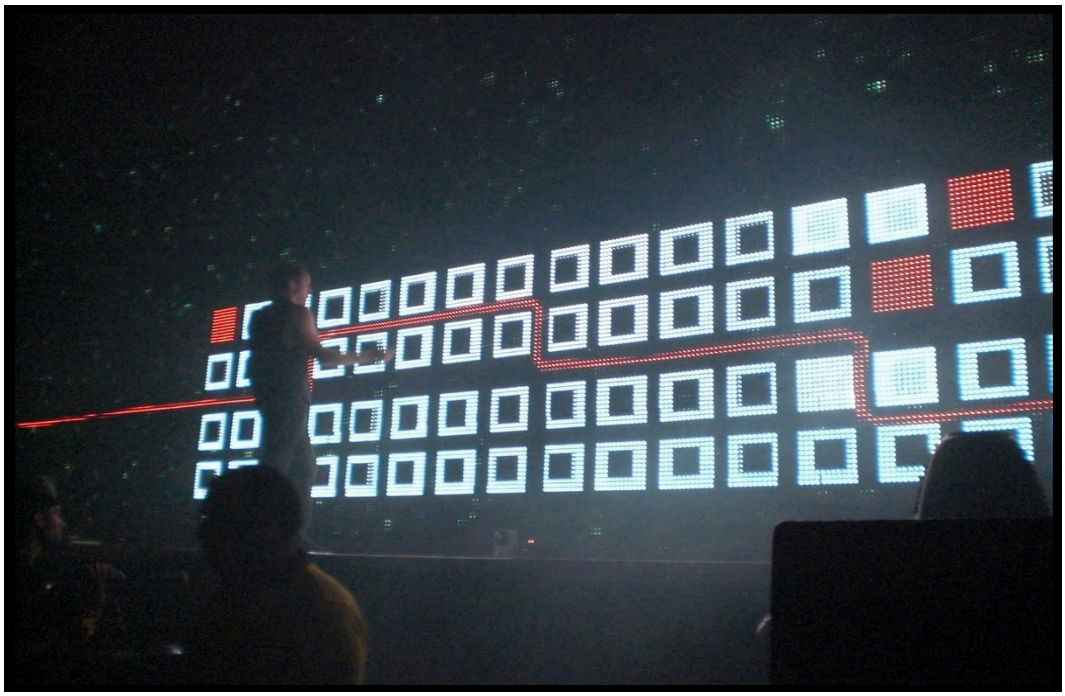

Figure 2.7 Nine Inch Nails step sequencer used in their 2008 tour. Image taken from http://www.flickr.com/photos/pikda2801/3042873774/in/photostream/

Artists such as Chris Cunningham, notorious for his suggestive and dark visuals and music videos, take these ideas further and attempt a sensory overload during performance with both extremely loud music and a stream of often violent and graphic visuals. The central aspect of these three artists is that the music and video are tightly synchronised and create strong causal relationships, potentially aiding in the understanding and perhaps the appreciation of the music. In the cases of Cunningham and Tobin this extra visual information is a live audio/visual composition, where the audio and video are often composed together and are as important in the performance as each other. At the other end of the scale there are a handful of performers who attempt a different approach, which is more in keeping with the acousmatic tradition. This approach removes visual stimuli from the audience by either not supplying them with additional visual distractions or, in the case of Autechre and Boards Of Canada, turning out the lights altogether[22].

Almost across the board, however, electronica performances are controlled in a way that is

[22] The author has attended a number of Autechre concerts spanning some 20 years. None of these concerts used projections or any additional visual stimuli for audience members. Further to this, every performance has been in a space where lighting has been either completely removed or kept to a minimum.

devoid of any useful gestural information, and more often than not the use of visuals acts as a way to give the audience some additional connection with the music. Electronica performances often use control methods that do not relate directly to the sounds being generated, and therefore do not give any additional or useful information to the audience. Other popular music gives this information out more freely, with the use of physical instruments and vocals allowing the audience to appreciate virtuosity and be able to identify, in many cases, what is likely to happen next; a drummer swiping towards a crash symbol, the lead guitarist picking up their instrument and drawing up their hand ready to strum a chord. This amounts to a visual picture of who is doing what on stage, and how good they are at it. Electronica, whilst not creating a traditional acousmatic situation, exists only over loudspeakers, and there is certainly a dislocation between the audience and the performing musician in the interpretation of gestural information that relates to the sound generation. In electronic music performance, energy in does not always equal energy out as Hunt and Wanderley attest to when relating modern computer aided performance systems with that of the church organ: *'The player can use specific controls to change the timbre (on the organ this is done by the use of the stops, the swell pedal and coupling stops). The energy to make the sound comes from an external supply, not the player's energy'.* (Hunt & Wanderley, 2002: p.97)

This idea of *energy in does not equal energy out* has significant bearing for many kinds of electronic music live performance. The idea is included here as a possible reason why many performers working with live electronica, and other electronic music, feel the need to give the live show more grandeur and make it more relatable by including time synchronised visuals.

A common practice that seems to be have been adopted by many electronic music live performers is splitting compositions into 'stems'[23] and triggering the playback of these live. The performer can then reorder playback of the stems, remove elements or replace them with stems from other compositions. It is also possible for the performer to compose new material to replace elements for an individual performance, or to process each stem differently each time to make unique performances. Each time this takes place a live remix

[23] Stems are the individual layers that originally constructed the composition.

of the original track will unfold in performance. These stems are either triggered from outboard instruments and sound emitting devices, or from separate files inside a performance software application such as Ableton Live[24]. An interesting version of this idea can be found in a Red Bull Music Academy video with electronica artist *Four Tet* entitled *Studio Science: Four Tet On His Live Set* (Hebden, 2013). In the video Four Tet describes his process of live performance and demonstrates not only the idea of working with stems and loops in Ableton Live, but also methods of deconstructing and reconstructing his music in real-time using a variety of cheap antiquated tools, which allow interesting and aesthetically pleasing results.

This process of splitting sounds into stems and re-performing them is a widely adopted practice in the mediatised[25] world of electronic music live performance. However, the ideas that relate to this practice can be seen to be largely in opposition to the acousmatic idea of working with the fixed medium, where the compositional structure is fixed before the performance. In contemporary acousmatic concerts the music is fixed in a PCM encoded digital file format, in a number of channel formats, and then performed over a loudspeaker diffusion system, from anything between one[26] and numerous loudspeakers. Whilst elements of the electronica performance remain fixed in the form of stems, the overall structure can be shaped and processed dramatically. This duality of ideas was tackled through a process of 'unfixing the fixed' in a number of recent compositions, including *Volmet North* which features in the portfolio. This idea of unfixing allowed two versions of the final piece to be explored in performance. Version one was the fixed two-channel incarnation of the work, designed for multichannel loudspeaker concert diffusion. Version two allowed for multi-stem remixing in the live laptop performance situation, such as the performances at *Meta-2* at De Montfort University and the SOUNDkitchen event in Birmingham which are listed in the appendix in the Performances and releases section.

Shifting attention onto acousmatic performance practice leads the focus away from dealing

[24] Ableton Live is a live performance tool originally developed by Ableton AG in 2001, the current version is Live 9.

[25] The term mediatised relates to the idea of using pre-recorded, electronically mediated, musical material as the building blocks of live performance and is documented by Sanden (Sanden, 2013) and others as being a natural opposition to 'liveness'.

[26] There have been calls for works composed for single sub channel only in the last few years.

with stems and the associated noise floors of the club. The acousmatic situation and the associated performance practices tend to be focused around four distinct areas which are addressed in turn. These areas are:

- Expanding dynamic range
- Enhancing spatial distance and movement
- Emphasising gesture(s)
- Control of image

In the portfolio pieces were composed with consideration for the four areas identified above, as well as exploring the use of stems enabling the music to be performed across a range of performance systems and locations.

The area of dynamic range has already been tackled from a compositional aspect in section 2.1.6, and Harrison's idea of *'enhancing dynamic strata'* (Harrison, 1999b) in diffusion was identified as the least that should be done by the composer. This means that a work that fuses both acousmatic and electronica needs to straddle a fine boundary between allowing enhancement in diffusion, as well as being able to make sense in our day-to-day world of iPod/iPhone listening with high ambient noise floor.

The second are relates to enhancing spatial distance and movement in diffusion, and is summarised by Smalley in an interview with Larry Austin as follows:

> *'...one should be able to expand these dimensions: in other words, make the distant more distant, exaggerate closeness, exaggerate distance, play with the height of the image, thereby adapting the space composed into the music to the dimensions of the listening space.'* (Austin, 2000: p.12)

This equates to the requirement that a piece being composed for diffusion needs to be created with spatial movement and depth as central compositional constructs in order for it to make sense in diffusion.

The third area, relating to the emphasising of gesture(s), suggests that a work should employ Smalley's ideas of gesture as discussed within spectromorphology (Smalley, 1997) for it to make sense in diffusion. This will then allow the gestures to be enhanced in the multichannel concert setting. As Zvonar explains: *'associated with this is the concept of "spectromorphology" — that is, the association of the sonic shape of the source material with the performance gesture used in diffusion. Putting it more simply, the sound "tells you where it wants to go.'* (Zvonar, 2004)

Considerations for image control, the fourth area in the list, are relevant to both stem mixed electronica and two channel acousmatic music in diffusion, and so are not given any special treatment in the composition of the works in the portfolio.

2.3 Cultures

2.3.0 Sonic Memes

In chapter one (1.1.1), the concept of the sonic meme was introduced as a way to identify and describe culturally significant material. The term offers a way in which the composer might draw out sonically significant material from a genre of music and include it, or a version of it, in another. This idea can be useful when discussing certain elements of the portfolio. However, there are two issues with the meme that become apparent when using it in the context of this research.

Firstly, in some contexts such as the use of musical quotation, the notion of the meme requires the understanding of, and consideration for, extra musical meaning and associations. This is, of course, in opposition to Schaeffer's idea of reduced listening and potentially the wider appreciation of the music in the portfolio, which is by its very nature intended to be acousmatic. It might be suggested that the inclusion of the sonic meme begins to work against the second half of the portfolio as the extra-musical significance becomes critical to understanding the work. However, the pieces in the second half of the portfolio have been composed in a way that uses the meme as a musical object in itself. The composition of the works is such that the memes that have been used are intended to

be apparent and significant for some listeners, who will leave with a certain reading of the work. Let us identify an instance of such a listener as listener A. The meme can also be bracketed out, resulting in a more acousmatic reading of the work. This way of listening will be identified as listener B. The appreciation and understanding of the work will, of course, be dependent on the listener's background, which is nothing new as all listeners bring their prior experience to bear when sensing and attempting to understand the world. However, listener A, who is less well versed with the acousmatic tradition, may find *'something to hold on to'* (Landy, 1994) in the extra musical meaning(s) associated with the meme with which they are more familiar. Neither listener A nor listener B will be at a disadvantage when experiencing the works, as neither reading of the work is seen as definitive.

The second issue that becomes apparent when dealing with the meme relates to the nature of electronica itself. In chapter 1.1.3 Alwakeel's idea of IDM, or electronica as it is termed in this dissertation, is that the music does not have specific paradigms that allow it to be easily identifiable. However, there are certain technologies that seem to have an alliance with electronica, most notably machines like the Roland TR-909, 808 and 606 drum machines, and later the Roland R-8 and Elektron Machinedrum. These machines have associated timbres and ways of working that produce sonic memes. For example, the TR-909, 808 and 606 have distinct drum sounds that many electronic aficionados will instantly recognise and relate back to techno music or electronica. The Roland R-8 and Elektron Machinedrum allow composers to produce complicated and intricate sequences of drum sounds, which are associated with many composers in the electronica genre.

Whilst Alwakeel's statement earlier can be seen to be true in part, the idea that electronica cannot be hermetically sealed *is* identity in itself. Where it is possible to state that house music or techno does adhere to certain stylistic boundaries, it is also possible to state that electronica explores these. Anything which is composed from primarily electronic elements that falls outside more standard music structuring, such as 4/4 time signatures, regular repeating kick drums on the down beat, tempos of less that 120-130 bpm begins to suggest that we are listening to electronica, rather than house, techno, electro, or breakbeat.

There seem to be two distinct areas of memes that relate to electronica. These can be separated into the types of sounds used (timbral), and how sounds are arranged (compositional). The timbral and compositional memes used in this research were:

Timbral memes

- 909 - Bass drum and snare
- 808 - Bass drum
- Juno 106 – Pads
- Jupiter 8 – Pads
- TR-606 – Hi-Hats

Compositional memes

- Dynamic high frequency percussion – related to the Machinedrum pattern lock programming as well as other similar tools used for composition
- Non standard time signatures as well as 4/4
- The use of stacked layers for structuring
- Textural and gestural materials
- Structured around pulse
- Can often be defined in terms of spectral and spatial behaviours
- Length – electronica pieces are typically 5-8 minutes in length[27]

2.3.1 Cultural frames

Emmerson[28] discussed the idea of poietic leakage to describe the accidental or intentional process of informing the audience about the compositional/creative processes involved in making the work. Mazzola et al. explain that poiesis: *'...is concerned with the individual condition of the creator as a result of its history of development as well as with the role of the broader socio-cultural frame of the work.'* (Mazzola et al., 2002)

[27] Length calculation was taken from the median in various electronica playlists from Warp records artists dating from the early 1990s to 2014.

[28] At the *IV Seminário Ciência Música Tecnologia* conference at Universidade de São Paulo (2012)

In many acousmatic concerts this poietic leakage is deliberate and conscious and uses the programme note to inform the audience of compositional intent. Composers have the option of providing additional information to the audience, withholding it, or deliberately misinforming them. Whilst electronica does not have the same mode of delivery, poietic leakage is widespread and it could be argued that the leakage that takes place defines many aspects of the genre. There is, for example, poietic leakage in:

- Artwork on album covers
- Release format
- Choice of live venue
- Associated record labels
- Imagery used in music videos
- Imagery during live performance
- Album names
- Track titles
- Choice of tools/technologies for music making
- Other extra musical associates (with other bands, design houses, visual artists)

All of this adds up to distinguish electronica from other genres, even before the listener has heard any of the music. A good example of this is highlighted by Demers when discussing the art of the front cover of the Boards of Canada album *Music has the Right to Children* (Eoin & Sandison, 1998). Demers offers the idea that there is a strong link between the music, which tends to be lo-fi and organic in nature, and the album artwork.

> *'The artwork for Music Has the Right to Children gives clues to the intentions behind these tracks, depicting children with 1970s-era bell-bottoms, T-shirts, and feathered hair, whose faces have been digitally erased. The sounds and groove of "Bocuma" and "Roygbiv" place us stylistically sometime in the 1970s, but the absence of clear quotations exudes vague nostalgia rather than directed longing for a specific instance in time.'* (Demers, 2010: p.50)

Venue has a relationship with poiesis and venue choice can, in some examples, be in contrast to the music being staged. Possibly due to the dance music heritage of electronica, most electronica bands continue to play live in venues that are more often associated with DJs, socialising and music for dancing, rather than venues associated with art music. As electronica develops this may change, but for now the rule of thumb seems to indicate the former, rather than the latter. This idea of venue influencing the music has informed the performance practices associated with the music in the portfolio and, importantly, how it is received. At NoiseFloor 2012 a performance was undertaken of a collection of two channel acousmatic works in a club setting. It was noted that people did not behave in the same way in the club setting as they did in the more formal concert diffusion setting, and tended to treat the event in a way that was more social - drinking, chatting and socialising. Even though the musical material was similar in nature to main diffusion concert setting, the venue, and its extra-musical associations, influenced the behaviour of the audience.

A similar event was witnessed at the International Computer Music Conference (ICMC) 2008, where there were a series of late night concerts staged in a bar across the road from the main campus of Queen's University, Belfast, the host for the 2008 conference. The mixture of art music and social venue created a tense atmosphere, as the majority of patrons were conference goers, rather than students. The organisers also placed seating in the venue suggesting that the audience needed to sit and listen, rather than socialise. However, there were a handful of people who were there to socialise and were at the back, chatting and drinking whilst the majority of the audience were trying, and failing, to sit and listen to the music, uninterrupted. In this example the intention of the conference organisers was clearly to attempt to create a less formal situation. Putting in seating and indicating that the patrons needed to sit and listen in a more formal, focussed way, knocked the balance off somewhat. In this example the poietic elements seemed to send conflicting messages to the audience, who clearly interpreted these messages in different ways.

Poietic leakage has also affected the programme notes associated with the works in the portfolio. Programme notes have deliberately focussed on the sound sources and their compositional relationships, rather than any meaning or emotive content that might, or might not, be associated with the works. By focussing on the intra-musical aspects of the

composition it is hoped that the audience members gain additional enjoyment for the sounds and how they were arranged, rather than any technical prowess or emotive associations with the piece. It is the intention of the composer that the audience adds their own emotional interpretation to the works if they feel the need to do so. Several casual comments received after performances indicated that this was the case. Descriptions of the technology used were also deliberately kept to a minimum as these were not deemed to be helpful to the listeners, and only served to break some of the spell of the compositions in question.

There are, of course, many other aspects of poiesis that relate to the works in the portfolio, but it is not relevant to begin listing them all here. The aspects that were relevant in the creation of the works in the associated portfolio are as follows:

- Performance location
- Delivery method – technical considerations for multichannel, working with stems
- Technology – many tools that are associated with dance music production, and have an associated sound, have been used to undertake transformations of sound. E.g. Ableton Live, FXpansion Geist, Arturia Jupiter 8v
- The sonic meme - which has been used as a form of poietic leakage potentially indicating a musical lineage to the listener
- Programme notes

CHAPTER 3

3.0 Discussion of compositions

The compositional process that drove the creation of the pieces in the portfolio used Schaeffer's idea of play (jouer) as a central role in both sound design and composition. This idea of play deliberately creates room for dialogue between the source material and the compositional direction of the piece through a two-way interactive process. This relates to the creation of both the acousmatic and electronica elements in the works, and the process of play was found to be applicable to both fields of composition, with some caveats. The ideas here relate to top-down and bottom-up composition strategies as discussed by many practitioners including Landy (2007). The bottom-up approach can also relate to Emmerson's language grid, and in particular the ideas of abstracted syntax discussed in chapter 2.1.1. The ideas relating to *'The Pleasure of Play'* are also relevant here, as discussed by Costello & Edmonds (2007). The central point is that many of the sounds that are used as the building blocks for composition were made as a result of an exploratory approach to sound and play, which then dictated much of the musical structuring that followed. An interesting tangent here is that some of the elements in the compositional process that relate to the composition of electronica were a combination of both bottom-up and top-down processes. The reason for the enforced use of top-down processes relates to the conventions that can be found in electronica that are allied to an abstract syntax rather than an abstracted one. As this research related to the exploration of the compositional world in between acousmatic music and electronica, there needed to be some composition of what might be deemed as more 'conventional' aspects of electronic music making. This required the composition of both percussive and pitched material in order to fully explore the two idioms and their emerging relationship within the portfolio. It also demanded a top-down composition approach in order to structure the materials in a way that was in keeping with the wider language of electronica[29].

[29] Using the syntax as agreed in the community of practitioners.

3.1 Compositions

The portfolio is divided into two halves. The first half is an exploration of acousmatic structuring principles and avoids structuring ideas that relate to the composition of electronica. The second half seeks to create a fusion of aspects of acousmatic music and electronica. It is important to document that the initial starting point for the exploration was to create works that sit on the opposite side of the language grid to electronica. As discussed in chapter two, electronica sits in the top left-hand corner of the grid, in the aural/abstract container. This portfolio starts at the bottom right mimetic/abstracted portion of the language grid, the realm of purest musique concrète, and grows out from there. The two halves of the portfolio can be delineated as follows:

<u>First half – Acousmatic</u>
Décalage (2008)
Solid Phase (2009)
Low-bypass (2010)
Batteries Of Orchards (2012)

<u>Second half – Fusion</u>
Papa November (2011)
Volmet North (2011)
Flinch-Rest (2012)
Reload (2013)
Refract (2013)
Repeat (2013)

It can be seen that this exploration was not entirely a linear process in terms of the dates of completion. In 2011 two fusion works were composed before the completion of the first half of the portfolio. This was due, in part, to the complexities of recording and composing the spatial aspects of *Batteries Of Orchards*, as well as a collection of composition experiments which came together more quickly to form *Papa November* and *Volmet North*.

3.1.0 *Décalage*

(2008) 6’34 (Fixed media - 8 channels)

Décalage was the first piece written for the portfolio. The central theme of the work is the creation of a compositional narrative through the use of recordings of organic and synthetically manufactured ‘real world’ materials. The piece is based around recordings of wood and metal in various states of interaction and motion. Unprocessed elements of the original recordings are evident in the arrangement, and are also used as the basis from which the rest of the sounds in the work are derived.

The composition is structured around a shift between the organic world, which is present at the beginning of the work, and the synthetic man-made world, which is where the piece concludes. The wider narrative reflects human society’s growing distance from the natural world and increasing reliance on technology.

The shift in the piece lies in the organic sound world at the beginning giving way to the synthetic, the synthetic becoming increasingly processed, and the natural slowly becoming unnatural as all reference to the original sound sources, and environmental cues, are stripped away. Familiar, brittle and erratic sounds, which are present at the beginning of the piece, mutate and give way to a darker, blurred and more vague audio world as the shift takes place. The mutation from the real to unreal is further emphasised as pitched material is introduced to complete the transition. In terms of Emmerson’s language grid this could be described as a movement from the mimetic to the aural.

The composition of the piece also considered space as a compositional tool for the first time. The original recordings were made in two channels, but rather than automating the amplitude of sounds to create structure, sounds were spatialised to create an additional level of compositional development. The spatial aspects of the sounds in the work were also used to enhance the original recordings and their real-world attributes. The concept was to not just work with concrete sounds but to compose concrete space which further enhanced the shift from the organic to the synthetic, a shift from the concrete to the abstract.

It was evident from the arrangement that the piece followed a different structuring method from that of electronica. The structure was not formed from stacked layers and looped material, as discussed in chapter 2.1.5, but from a collection of sonic events that embody the central theme of the shift. Sonic materials trigger the next event or set of events which then become compositionally related. For example, at around 1m 20s a bass drone is introduced which has embedded movement and energy. This energy is used as the trigger for the beginning of the pitched material that begins to appear at 1m 34s. The bass sound also links together the first section of the work, the water, wood and metal interactions, with the emerging noise based hiss at 2m 00s that marks the middle section of the composition.

An illustration of the structure of *Décalage* can be found in figure 3.0 below which illustrates the developmental structure of the work. This can be contrasted with the structure of *Foil* by Autechre in figure 2.5 which shows the structure of the work being formed from stacked layers.

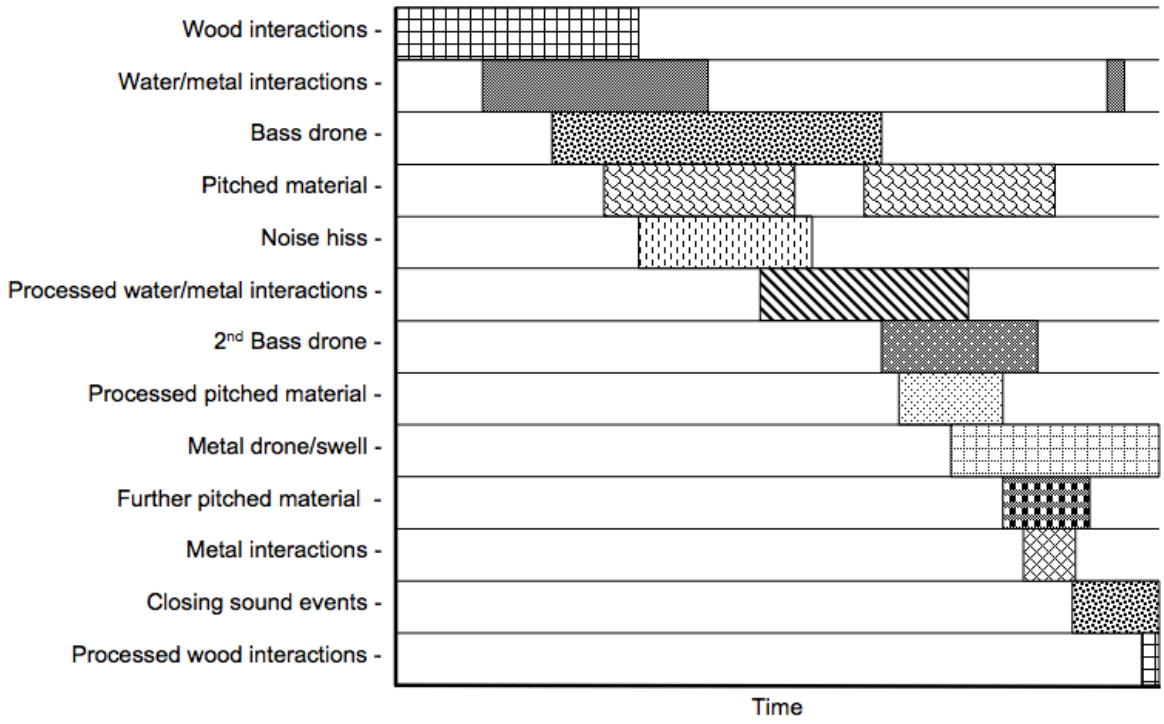

Figure 3.0 – Overview of the arrangement of *Décalage* indicating the general linear structure of the work.

3.1.1 *Solid Phase*

(2009) 7’36 (Fixed media - 8 channels)

Solid Phase was composed around underwater hydrophone recordings made in the winter of 2008 on the frozen canal systems around the West Midlands, United Kingdom. The theme of the piece was to take a single sound source as the starting point, in this case the hydrophone recordings, and explore the compositional relationships that can be built around these. The ideas presented in spectromorphology (Smalley, 1997) featured heavily in the composition of the work; in particular the piece was composed around gesture as a formative principle. In the original recordings transfers of energy are heard between ageing canal boat hulls and the frozen water that surrounds them as they rock on their moorings, influenced only by the wind acting against them. Some of the transfers of energy are subtle rubbing or scraping gestures, others are more vigorous collisions that create strong gestural material to work with, around which the other sounds in the work are arranged. Some of these recordings can be heard at the beginning of the work.

The piece was also composed in 8 channels to exploit the possibilities for the additional creation and manipulation of space. In this piece the hydrophone recordings were in mono, which allowed easy placement and further spatial exploration across the multichannel space. Two channel and mono recordings were present at the beginning of the piece until the gesture at 1m 45s. In this opening segment sections of recordings were mapped to stereo pairs of loudspeakers, above water recordings were mapped to speakers 1, 2, 3 and 4 and below water recordings were mapped to 1, 2, 5 and 6. This allowed one and two channel recordings to take on a much more immersive and complex spatial dimension. The mapping of these recordings is illustrated in figure 3.1 below.

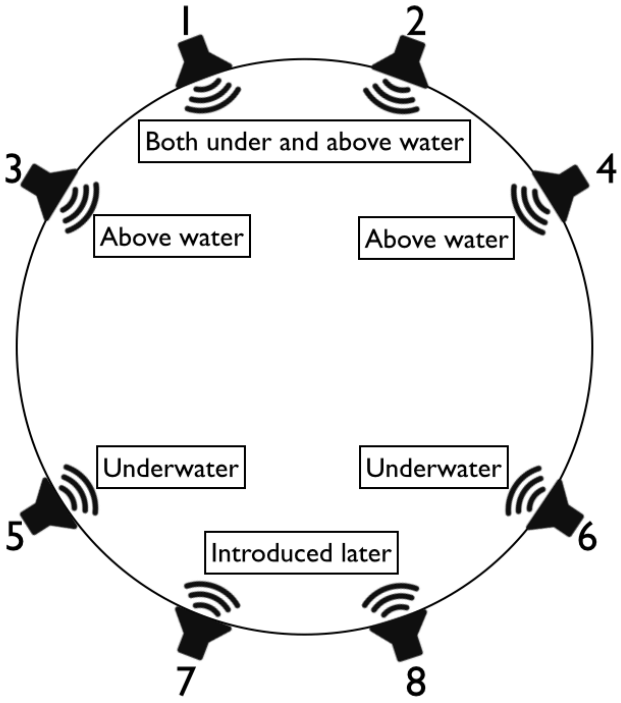

Figure 3.1 – Showing spatial locations of hydrophone recordings mapped across the 8 channel array

During recording, the placement of the microphone remained fixed and in close proximity to the sound sources. This allowed a great deal of room for spatial play and composed movement within the final composition, which effectively translated to the diffusion situation. Examples of this can be heard at 1m 50s and 3m 44s where the full 8 channels are introduced and movement is composed into the recordings using automated volume adjustments. Stereo recordings were used at 1m 50s and mono hydrophone recordings were used at 3m 44s.

The composition of space in the piece was influenced directly by experiences of diffusing *Décalage* in concert. In particular was the use of mono recordings and their intricate spatial placement as described above. Experience of diffusing *Décalage* also influenced the creation of dense and sparse sections in the work, which were composed deliberately with the multichannel concert situation in mind. An example of this approach can be heard at 1m 45s where the dramatic swell is articulated both in terms of amplitude and spatial motion.

3.1.2 *Low-bypass*

(2010) 22’00 (Fixed media - 8 channels)

Low-bypass is derived entirely from two-channel and four-channel recordings of jet engines while the engines were under their own power as well as ‘at rest’; the motion and sound generated was a result of the wind blowing through their tremendous turbine blades. *Low-bypass* was the first long-form piece in the portfolio and is formed from a collection of three movements. The reason for this was the volume and diversity of sounds captured for the composition and the resulting eagerness to explore the compositional possibilities of those sounds. It quickly became apparent that one single piece was not the best way to present the work, and there seemed to be a natural conclusion of the arrangement into three distinct sections, which are named after the combustion process inside the jet engine, *Intake*, *Compression* and *Combustion*.

Actions, reactions and energy transfer played a significant role in the field recordings and some of the resulting arrangement processes in the final composition were directly abstracted from the energy relationships from these. The initial recordings were taken in front of the fan discs of an Airbus A310 and a Boeing 737 which were both decommissioned and due to be scrapped. Images of the recording locations can be seen in Figure 3.2 and 3.3 where the portable recording device, a Sony PCM-D50, was placed inside the engine itself.

Figure 3.2 – Recording location inside an Airbus A310 engine.

Figure 3.3 – Recording location inside a Boeing 737 engine.

The transfer of energy that was apparent in these two recording locations was between the wind on the airfield and the fan discs; the fan discs themselves were turning in relation to the wind blowing through the engine. The resulting rotation of the fan disc was captured in figure 3.3 where the blades are blurred indicating this movement. The rotating fan disc resulted in a collection of fascinating recordings as the bearings hum, wind whistles through the engine and the fan blades slip and rattle in their mountings. Processed versions of these sounds are present at the outset, and cause the initial pitched drone sounds that can be heard. The fan discs beginning to turn can be heard at 1m 43s.

The first movement of the piece was deliberately quiet and intended to capture and represent the paradoxical nature of the huge, powerful and potentially thunderous jet engine making delicate, tranquil and muted noises. This is further enhanced in diffusion by lowering the volume faders to the point where the last section, between 5m 10s and 6m 50s, becomes almost inaudible.

The theme of action and reaction, the transfer of energy, was followed through in the second movement of the work. At this point the energy transfer was in the opposite direction to that in the first movement. The first movement saw nature influencing the man-made object, the transfer of energy was from nature as the agent[30] to the man-made as object resulting in the sound of the fan blades turning. In the second movement this relationship was reversed; the man-made becomes the agent and the natural becomes the

[30] The term agent is used here with reference to Emmerson's discussion of action and agency (Emmerson, 2007)

object. This transfer of energy was captured in the original field recordings of aircraft in flight. In these recordings, as the aircraft fly over the top of the recording location, it was noted that they created audible wake turbulence as they passed by. The reaction of the air to the passing aircraft was transplanted directly from the real world and placed in the composition and, in doing so, new energy transfer relationships were composed based around the man-made agent, in this example the jet aircraft. This created a set of strong causal relationships between the concrete recordings and other processed sounds that resulted in a stronger compositional coherence. Utilising the multichannel space to finish the composition of the gesture further enhanced the relationship between the agent and the resulting spectral life. The first of these interactions can be heard at 10m 05s where the aircraft recordings give motion and spectral life to percussive sounds which were taken from the original static jet engine recordings. The other five of these occur at 10m 22s, 10m 48s, 11m 10s, 11m 32s and finally at 12m 04s which gives rise to a tumultuous section which brings about the end of the second movement. This busy section includes many other field recordings and processed sounds that are drawn to a close by an aircraft passing from left to right across the multichannel space.

The final movement explores some of the gestures present in the original recordings and pushes at the boundaries of physical possibility through the use of audio processing using phase vocoding techniques. An example of this can be heard in the final movement of the piece at 18m 05s where the passing aircraft quickly slows down and freezes in front of the listening position. The same happens at 18m 25s as the natural motion of the passing aircraft is distorted through processing. Again, this phenomenon is further enhanced in space though automated volume adjustments that complete the motion in the multi-channel setting.

Whilst previous works in the portfolio have relied more on processing sounds in order to disrupt or break their source bonded nature, the acousmatic nature of the recordings in this work relied less on processing and transformation and more on sound selection, recording location and technique. This idea relates back to the discussion of recorded sound in chapter 2.1.7.

3.1.3 *Batteries Of Orchards*

(2012) 10’15 (Fixed media - 8 channels)

Batteries Of Orchards is based around recordings of flying insects (wasps, bees and flies) and seeks to extend some of the ideas employed in the previous compositions in a more sophisticated manner. The piece brings together composing with multichannel space as a central theme, as well as exploring the notions of spectromorphological expectation and a strong sense of compositional growth which was afforded by the source material.

Insects, by their very nature, are erratic and fleeting. After collecting and organising the source recordings it was apparent that they demonstrated a unique movement and energy that could be harnessed for compositional structuring. The initial recordings began back in the mid 2000s with the very close recording of a wasp inside a paper bag, which contained a collection of jam doughnuts. These initial recordings were very close miked and contained both buzzing sounds as well as the sounds of the wasp scrabbling and clawing its way around the bag to get to the grains of sugar. This recording was deemed not to be compositionally suitable by itself and it was not until early 2012, when various other recordings of swarms of insects were undertaken, that this newly recorded sonically dense material could augment the original wasp recordings. This allowed for a relationship between related sonic worlds, namely that of the insects, as well as two ends of a timbral spectrum which could be explored to build and develop tension through studio montage. This tension can be heard in the section beginning at 2m 50s, where the gestures in the single insect recording give way to a swarm at 3m 06s. This occurs again at 3m 40s where the piece thins back to the individual insect before the inherent gestures in the recording give way to processed insect swarms and other ambient recordings at 3m 50s.

The opening gestures in the piece, and the source bonds that are established in the unfolding discourse, are further explored as the piece progresses. The bonds that are established are those of insect flying gestures triggering the onset of other sounds. A good example of this is at 1m 19s, and again at 1m 32s. This source bonding is illustrated in figure 3.4 below and can be heard in the piece between 01m 15s and 01m 24s where an individual wasp gesture triggers the onset of a new processed granular sound.

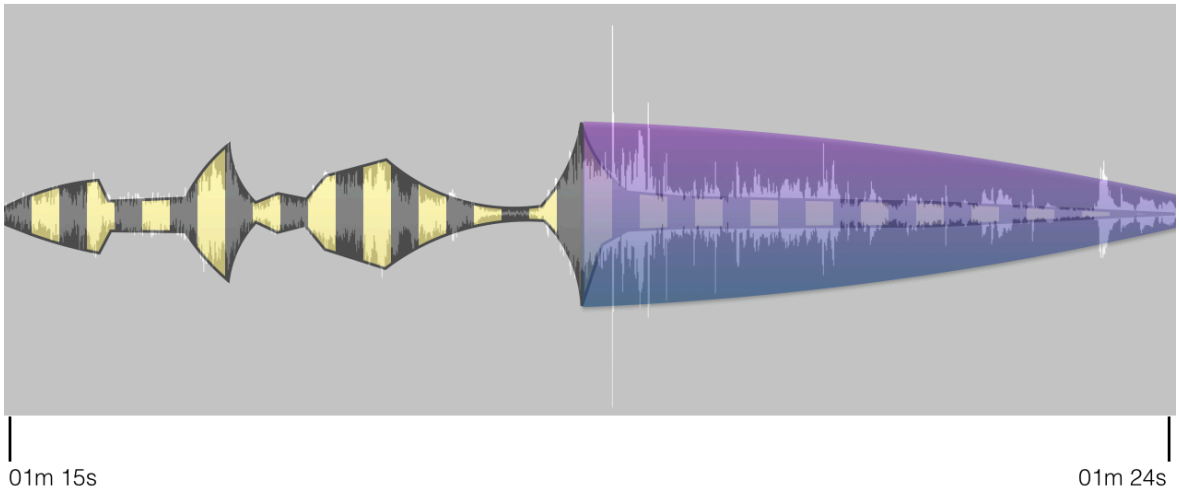

Figure 3.4 – Illustrating the relationship between the individual wasp recording, illustrated in yellow and black, and how its gesture is used to trigger the onset of a processed granular sound, illustrated in purple. The original waveform display is visible in the background.

At the beginning of the piece, spectrally thin individual insect recordings establish a language of causality with more dense, processed insect swarms and other groupings of sounds. Many of the compositional structures which follow later in the piece are based around these relationships. Sourced bonded relationships are then created and broken where the gesture of the insect brings more and more material into life as the piece unfolds. At around 2m 40s the piece thins down to a section that is based solely around the original unprocessed wasp recording. During this section the spatial movement of the original recording was extended from two-channel to eight-channel using the Octogris plugin and the iPad application TouchOSC. This combination of technologies enabled the spatial aspects of the recordings to be adjusted in real-time and consequently recorded as automation in Logic Pro. By undertaking this process the piece was able to take real sound and place them in a quasi-real space which exploited Wishart's ideas of the imaginary landscape discussed in chapter one. Screenshots from Octogris and TouchOSC are illustrated in Figure 3.5 and 3.6. Figure 3.5 shows the Octogris plugin and figure 3.6 shows the iPad interface that was created to control Octogris.

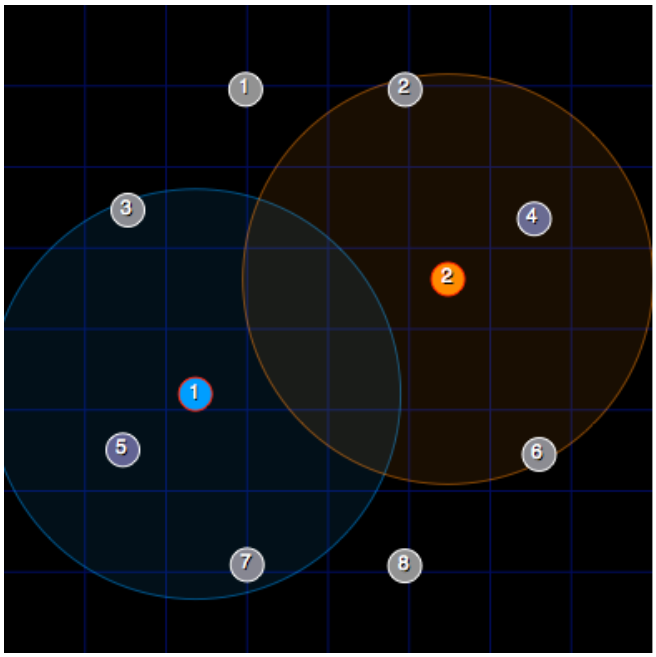

Figure 3.5 – UDM Octogris v1.5 (Université de Montréal 2013) plugin showing the arrangement of loudspeakers in *Batteries Of Orchards* and the location of the corresponding two channel audio files, indicated by the blue no. 1 and orange no.2.

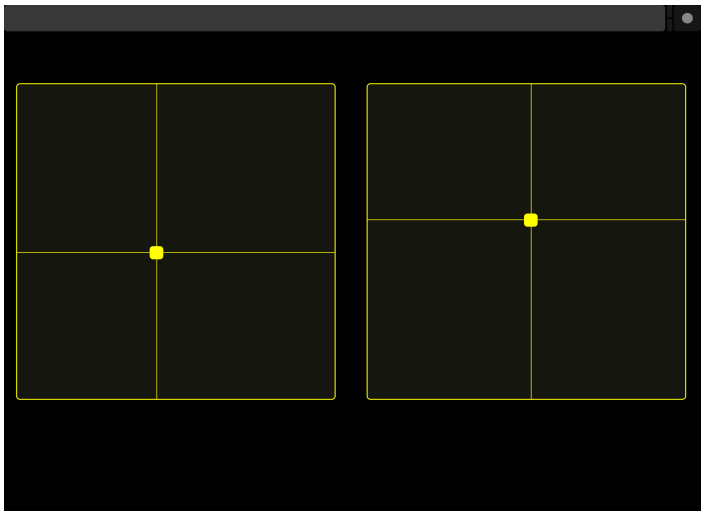

Figure 3.6 – A screenshot from the iPad app TouchOSC v1.9.3 (hexler.net) showing the two X/Y pads. These allow the composer to move the two channel recordings independently in real-time. The X/Y pads in this diagram relate to blue and orange channels in figure 3.5.

In previous eight-channel works, any such movement as described above was drawn into the digital audio workstation (DAW) in an offline process. Whilst this process worked for some sonic material in earlier multichannel works, the highly gestural organic nature of the recordings used in *Batteries Of Orchards* was benefitted by the physical interaction with the sounds, which was afforded by the use of the iPad touch screen interface. The result of the gestures in the recordings and composed movement in the multichannel space gives the added impression of the insect walking and flying around the loudspeaker array, resulting in a convincing source bonded space. An illustration of the automation that that was recorded from the iPad running TouchOSC can be seen in figure 3.7 for the section between 2m 29s and 3m 06s. This automation controlled the X/Y location of the blue and orange channels in Octogris.

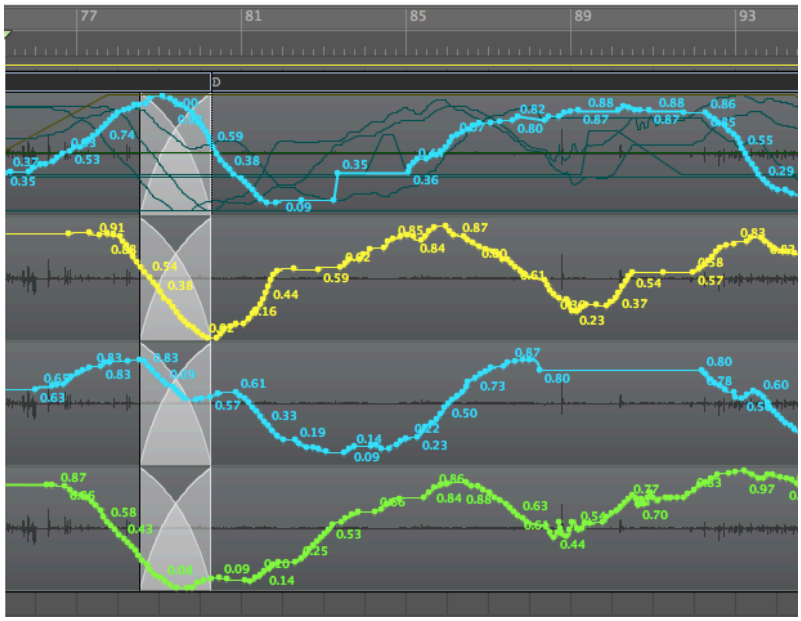

Figure 3.7 – Screenshot of the automation of Octogris in *Batteries Of Orchards* between 02m 29s and 03m 06s.

3.1.4 *Papa November*

(2011) 5’36 (Fixed media - 2 channels)

Papa November and *Volmet North* are the first two pieces that begin combining compositional practices from electronica and acousmatics. *Papa November* is composed roughly around a metric grid and uses distinctly pitched materials which are intended to evoke an emotive and melancholic response in the listener. However, at the same time there are distinct acousmatic composition ideas at work in the piece which are based on some of the compositional exploration undertaken in the more overtly acousmatic works created previously in the portfolio.

The piece is initially formed around textural aspects rather than overtly gestural ones, and based on more electronic sources rather than concrete ones. It is also structured around the use of stacked layers of sounds as discussed previously, which is more in keeping with the practices associated with the composition of electronica. However, the electronic sounds are processed in a similar way to the field recordings in previous works, for example granular synthesis is used on the bell-like sounds at the beginning of the piece which give the sound more real-world behavioural characteristics such as bouncing/vibrating. The piece explores some commonality between the acousmatic music practices adopted for the first compositions, such as sound transformation and processing using granular synthesis, spectral processing and convolution techniques. There is also an overt use of spatial composition where sounds are both existing in and moving through space. An example of this can be heard at 1m 53s where a percussive looped sound and a noise based drone emerge from the background. This is achieved by increasing the cut off value of a low pass filter to allow more high frequencies to pass, emulating the characteristics of how sound propagates in air. This aspect was explored further in diffusion by manipulating volume faders to further enhance this motion which allowed the piece to make sense in the multichannel concert situation.

Papa November is not based around the ideas of causality as much as previous acousmatic works in the portfolio; textures flow and ebb rather than being directly related to each other

in terms of their spectromorphological behaviour. This central structuring idea can be seen in figure 3.8 below and can be contrasted with figure 3.4 above.

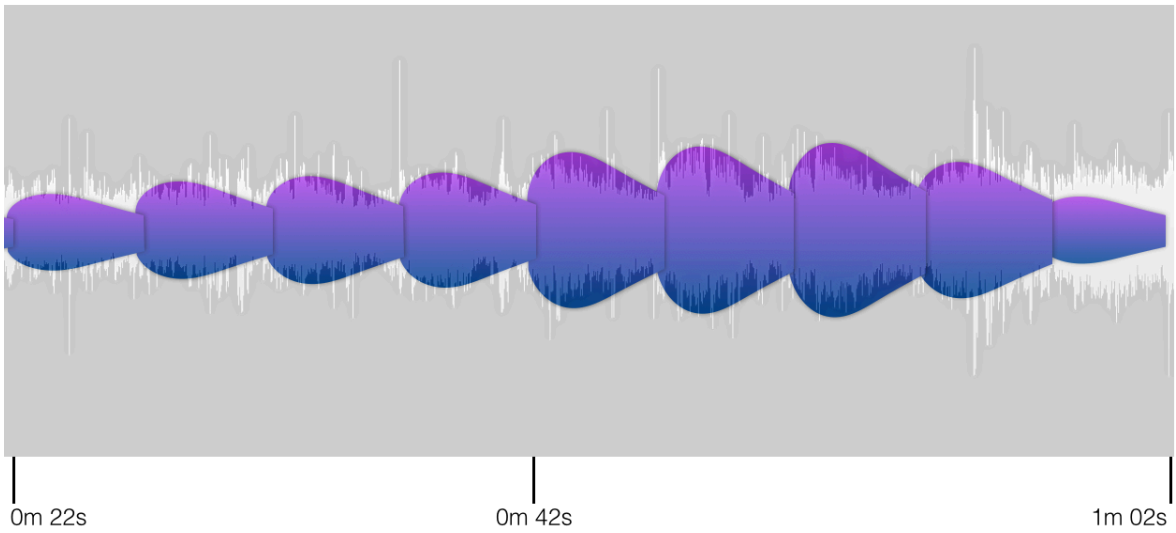

Figure 3.8 Indicating the swells present in Papa November between 22s and 1m 02s. The swells are depicted here in terms of their location and their spectral density, larger objects in the diagram indicate more powerful spectrally richer sections.

The contrast between figure 3.4 and 3.8 indicates one of the central differences in how musics in the portfolio differed in terms of how they were structured. Figure 3.4 shows how a single sound leads to the on-set of another using a source/cause relationship. In figure 3.8 the sound that loops is accompanied by many other sounds that are introduced and are removed using a tempo based grid to create structural growth and depletion. When offering *Papa November* up to the language grid the piece can be viewed as being based around both aural and abstracted syntax with a resulting discourse which is a mixture of both mimetic and aural aspects; the mimetic coming from the use of real-world behavioural and spatial characteristics that are imposed on the work that have been discussed previously. This suggests that its likely place on the language grid is somewhere near the centre of both the aural/mimetic continuum and the abstracted/abstracted one.

The aural nature of many of the sounds is obvious as they are often pitched and arranged according to a conventional western tuning system, as well as being arranged roughly around a metric grid. However, they have also had real-world behavioural and real-world presence aspects applied to them, making the sounds bounce, roll and flutter. This was

achieved by processing the sounds with granular synthesis software and adjusting grain density and other parameters to create these real-world attributes. An example of the of the bouncing and rolling archetype can be heard at 02m 38s in the higher frequency register.

During the course of the piece, many sounds evolve and grow through the use of reverb, filters and other transformations that can relate to the ideas around source bonded space, as discussed by Smalley in spectromorphology. This can be heard in middle section of the piece between 03m 00s and 4m 00s where strong spatial characteristics are present. The piece can also be linked to the ideas of motion and growth and can be described in terms of being formed around undulating, oscillating sounds that relate to a shifting spectral density. The undulating/oscillating sound is illustrated in figure 3.8 above, the spectral density being illustrated by the size of the shapes in the diagram. The spatial attributes mentioned previously and the reciprocal oscillating nature of the piece allows further enhancement in a multichannel diffusion setting, where the 'sway' of the piece can be emphasised in a left right plane, or from front to back. However, there are points at which spectromorphology becomes less useful in discussing or analysing this work, and it is at this point that parallels can be drawn with this piece and the composition practices associated with electronica, such as the use of stacked layers and the use of regular pulses of sound arranged around metric time.

3.1.5 *Volmet North*

(2011) 7'58 (Fixed media - 2 channels)

Volmet North is similar in many respects to *Papa November*, in that it uses a combination of acousmatic musical structures as well as ideas that are more closely related to electronica. *Papa November* and *Volmet North* can be seen as a duo of musical works that explore similar compositional ground. However, *Volmet North* differs in two key aspects. Where *Papa November* was mainly formed from synthetic elements with the inclusion of some field recordings, *Volmet North* was composed from processed field recordings and radio broadcasts with less synthetic material being present. *Volmet North* was also formed from transformations of an older piece of electronica composed by the author in 2002. The

inclusion of these transformations is intended as the beginning of an acousmatic 'remix' aesthetic by treating earlier compositions as concrete source materials with which to work.

The central theme of the piece is the capture and recapture of materials that would otherwise have been lost in the aether of file storage or radio broadcast. The concept of intercepting and recording radio broadcasts was intended to explore the ideas discussed in chapter 2.2.0 relating to the *'super frame'* (Emmerson, 1999). Further to this idea, the title of the piece comes from the name given to the network of meteorological transmissions used by aircraft to avoid inclement weather whilst circumnavigating the globe[31].

Unlike *Papa November*, *Volmet North* is not arranged around a rhythmical grid, even though there is inherent rhythm present in the work. The opening section was based on a pendulum motion and there are both composed/abstract gestures, as well as gestures abstracted from the original recordings present in the piece. The opening section was composed around two main elements. These were a synthesised sound, producing the main pendulum motion, and a hydrophone recording which is gesturally related to the pendulum. In composition it was envisaged that the oscillating pendulum imparts energy to the other sound in a loose source bonded relationship. This can be heard in the piece between 00m 28s and 01m 10s where the gentle motion of the synthesised sound brings the hydrophone recordings to life. This can be contrasted with *Papa November*, where the looped elements are introduced in a way which is more in-keeping with the rhythmical grid, and not based on source-cause relationships.

The central motive for including the transformations of the pre-existing electronica works was to explore the *'expanded mimetic'* (Emmerson, 2013) elements that relate to the original electronica composition that was processed and used in the piece. The original composition, entitled *Sorry to Wake You* (Ramsay 2001), had its gestural percussive information removed through the process of phase vocoding which left some timbral characteristics of the work intact. The emergence of the resulting sounds are at 00m 40s and the main drone which becomes audible at around 02m 10s. This process of blurring the original recording might not necessarily result in any mimetic understanding from the

[31] London Volmet North is transmitted on VHF band 126.60 (Photavia Press, 2013)

listener perspective as they would need to be familiar with the original work in order to interpret the timbre. However, it is envisaged that upon hearing the work, the listener will gain *some* understanding that elements of the piece are from more synthetic sources, and the timbre of the sounds are, at least in some way, mimetic of the sound of electronica which is largely constructed from synthetic material. Expanded mimesis, in the context of *Volmet North*, might be further explained not as a single understanding of the expanded mimetic properties of the sounds themselves, but as a sliding scale of understanding or interpretation relating to familiarity with the sources that were used in its composition. Familiarity describes the listener's experience of, and exposure to, the sounds being described here.

It may be trivial to document but a greater understanding of *Volmet North* is dependent on exposure to electronica and its associated language and sonic landscape, and to the original pieces of music being transformed and used in the piece. Shortcomings of this process, in particular the requirement to know previous works of the composer, were addressed in the following piece *Flinch-Rest* which used more universally mimetic materials.

3.1.6 *Flinch-Rest*

(2012) 9'06 (Fixed media - 2 channels)

Flinch-Rest is the result of exploring the compositional shapes and structures of some aspects of acousmatic music and electronica, and creating a fusion of these elements inside a single composition using the electronica elements as concrete materials. The main elements of *Flinch-Rest* are organised around percussive, physical, gestural and textural material and use the ideas of 'concrete' as Dack (Dack, 2002) and Harrison (Harrison, 1999b) described them.

The sections that are formed from beats and loops in the piece are, by their nature, aural. However, the piece has attempted to take these aural forms and use them in a concrete manner as gestural material, which grows and mutates in a concrete way. An example of this can be heard in the section beginning 04m 47s where bass drum samples introduce loops and phrases that grow and develop. This section is tied into the composition as the

gestural shape is reminiscent of the bass drum hits that are first used at 00m 56s. The individual bass drum hits are causally related to other granular and drone based elements, examples of which can be heard at 01m 16s, 01m 21s, 01m 26s and 01m 31s. The use of beats and percussive sounds do not dominate the work and their structure and development are as a result of real-world behavioural attributes being applied to them. The piece is not structured entirely around an abstract syntax, and where aural elements have been composed these are embedded into the work in a concrete manner.

Sounds that form the abstract structural elements of the composition were based around the ideas of sonic memes discussed in chapter one. The sonic memes that were identified during sound selection were the TR-909, TR-808 and glitch based high frequency percussive elements that can be found in many examples of electronica. The high frequency percussive elements can be heard at 04m 14s and are reintroduced at 05m 12s. The TR-909 and 808 sounds form the loops and bass drum hits beginning at 05m 12s. These sound sources were arranged in a manner that is in keeping with electronic dance music composition, most notably the use of loops which are arranged in stacked layers. Examples of this can be heard at 05m 12s, 05m 19s and 05m 30s where the layers build together to add tension in the work. This structuring method could also be described in terms of a sonic meme, but a meme that relates to the structuring of sounds rather than their timbre.

When relating *Flinch-Rest* to the language grid it can be seen that there is a distinct movement across the grid as the piece unfolds. This is the result of the piece using both mimetic and aural discourses, which are formed from abstract and abstracted syntax in different parts of the work. This is illustrated in figure 3.9 where the arrow indicates location and movement and is marked by significant points in time.

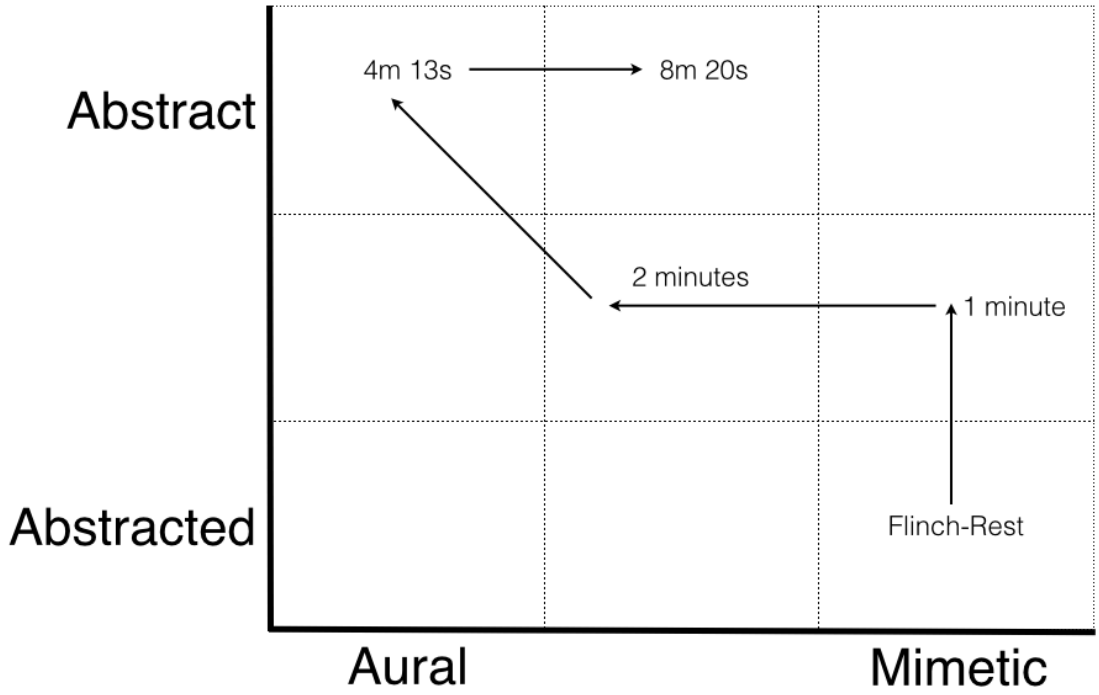

Figure 3.9 Illustrating how *Flinch-Rest* maps to Emmerson's language grid, with time stamps and indication of the direction of movement in the work.

The piece also explores spatial composition strategies similar to those explored in previous works in the portfolio. As discussed, the notion of creating compositional growth and development through the use of space is a concept more familiar to the practice of acousmatic music. However, these spatial aspects are applied to some of the electronica aspects of the work, namely the beat based loops in the piece, and in essence fusing aspects of electronica and acousmatic music. A good example of this can be heard at 08m 36s where the final looped section has real-world presence parameters applied to it in the form of filtering, automated amplitude and reverb. This combination of effects brings the piece to a close by moving the sound away from the listening location in a quasi-real space.

It is intended that this piece is equally capable of being performed in a multichannel diffusion concert or listened on a two channel system without any loss of value or identity. This is possible due to the piece being driven by both physical gestures and spatial aspects which lend themselves to diffusion, and rhythmical and other abstract structures which translate to two channel listening environments.

3.1.7 *Reload*

(2013) 7’12 (Fixed media - 2 channels)

The last three compositions in the portfolio *Reload*, *Refract* and *Repeat* were originally composed as three movements of a single work titled *Injection*. As composition progressed it became apparent that they had grown apart and worked better as three individual pieces, rather than as a single work of three movements. The pieces are based around the idea of injecting or re-injecting energy into samples and recordings from existing pieces of techno, house and electronica, both original works composed by the author as well as works composed by others. The reason for using pre-existing work is twofold. Firstly, it is envisaged that a listener who is well versed with the techno and electronica canon will recognise the sources, even through they have been heavily processed in order to make them useful inside an acousmatic structure. The original source materials were selected and used because they acted as a meme for the listener; as a sonic signpost indicating a link between the original sources and the acousmatic situation they are presented in. Secondly, these three pieces are devised to extend the acousmatic remix idea, by taking compositional processes that are known to dance music and reconfiguring them inside an acousmatic music structure. This process is similar to the dance music aesthetic where remixers take sonic material from other genres, or the same genre, and appropriate it inside structures familiar to their own.

Each of these three pieces take a slightly different approach to the sound source, processing and subsequent arrangement. *Reload* uses three original pieces of dance music as the source material, each of which were used for their cultural significance and expanded mimesis. These pieces were selected as they represented early examples of the house and techno genres, and could be viewed as the roots of electronica. The pieces were:

Tranzister by Kevin Saunderson (Saunderson, 1988)
Strings Of Life by Rhythm is Rhythm (May, 1987)
Can You Feel It by Mr. Fingers (Heard, 1986)

They were deconstructed using various processing tools from granular synthesis, phase vocoding, convolution and spectral processing. Where *Reload* strips down at 01m 02s elements of May's *Strings Of Life* can be heard which have been phase vocoded. The swell at 04m 30s is a granular synthesized version of Saunderson's *Tranzister*, and processed elements *Can You Feel It* by Mr. Fingers creep out of the mix at 05m 33s. The processes undertaken on the original works left timbral information intact whilst removing the structural/arrangement aspects of the works, similar to how many concrete sounds were treated in earlier compositions in the portfolio. This resulted in timbral memes[32] being preserved at the micro-level, whilst compositional memes were blurred or erased at the meso and macro-levels. These sounds were then recomposed using compositional structuring methods that are more familiar to the acousmatic tradition, such as the use of space, dynamics, and motion and growth processes.

An example of the kind of motion and growth processes being discussed occurs at 01m 17s, where short percussive gestures seem to give energy and motion to other sonic materials forming a source bond and a compositional relationship between the materials. Space is deliberately composed in the bass elements at 05m 44s which are low pass filtered and appear much more distant than the other elements in the work. Then at 06m 02s a swell occurs that grows from being a distant and primarily low frequency sound to filling the mix with a much broader range of frequencies, this gives the sound real-world presence which can be further enhanced in diffusion by emphasising the inherent motion and growth.

3.1.8 *Refract*

(2013) 7'04 (Fixed media - 2 channels)

The second piece in the trio, *Refract*, is built on the idea of using existing works as source material. In this example, a track entitled *D-Sho Qub* by the electronica duo Autechre from their 2010 album *Oversteps* (Booth & Brown, 2010) was used. The source sounds were processed in a similar way to *Reload* and their behavioural characteristics were largely removed or blurred, leaving timbral memes intact at the micro-level. However, this piece

[32] As discussed in chapter 2.3.0

differed in how energy was re-injected into the processed sounds, and how they were then subsequently arranged at the meso and macro-levels. Whilst sounds in *Reload* were arranged in such a way that related to acousmatic musical structuring, *Refract* preserved some rhythmical aspects of the original source sounds which were used in conjunction with the idea of injecting real-world energy into the work. A good example of this reinjection of energy is at 00s 12s into the piece. This section was created from processed beats from the original piece, but the processing left the resulting audio file lacking in expression. Real-world behaviour was then reinjected back into sound using volume automation and an increasing grain density to give the sound a new spectromorphological shape. This shape then allowed for compositional structuring which can be heard at 00m 18s where the granular beats give rise to other sounds.

In addition to these meso-level preservations, the overall macro-level structure of the original piece was also preserved. This was achieved by splitting the original two-channel piece into nine compositionally distinct areas, processing these individually, and then reforming them in the new work in the same chronological positions. The resulting piece is slightly longer than the original as the processes did not conform to the same time base as the nine divisions of the original work. Importantly the timbral memes of the original sound are preserved, again giving the listener some indication of the intention of the piece, and potentially of the composer; poietic leakage in this case is deliberate and composed. This is no more evident than at 05m 17s where the processed choral sound is timbrally very similar to the original by Autechre.

3.1.9 *Repeat*

(2013) 7’12 (Fixed media - 2 channels)

Repeat builds further on the ideas of the previous two compositions, but rather than using pre-existing music as the source, it is based around an original piece of electronica composed specifically for deconstruction and transformation. However, the notion of the meme is still a key compositional construct in *Repeat*, but rather than the meme being extracted from a prior work, a collection of memes were identified and used as compositional building blocks at the micro-level. The memes used in this piece were:

- TR-808 kick drum
- Jupiter 8 pad
- Dynamic high frequency percussion
- The use of stacked layers as structuring
- Structured around pulse

The central compositional direction of *Repeat* was to include strong acousmatic elements inside a piece that is structured around an abstract syntax, specifically around the use of beats and an equal tempered scale; *Repeat* is the most percussively heavy work in the portfolio and the tempo track was used from the outset. The composition of the piece explored the idea of injecting real-world parameters onto the more formulaic aspects of electronica, most notably the beat and pitched material, to create a combination of unreal sounds in real/mimetic space[33]. The composition of the spatial parameters was achieved by automating parameters in reverb units, such as wet/dry settings, as well as low-pass filtering, flanging and phasers. A good example of where real-world presence occurs in this piece is on the percussive sound that is introduced at 02m 03s. This sounds starts dry and with a full range of frequencies present. Over the course of the next 37 seconds, until 02m 40s, the sound looses its high end frequencies, reverb is applied and a small amount of phaser is added to push the sound into the distance. The section beginning at 04m 48s also has real-world spatial attributes applied to move the main drums around in quasi-physical space. The main drums then finally become so blurred at around 06m 25s that they recede into a texture to bring the piece to a conclusion.

During the composition of the work the concert diffusion performance and the home hi-fi/headphone/iPod listening situations were considered and it is intended that the piece works equally well in all these settings. These situations were considered when working with the dynamic aspects of the work, and a careful balance between the loud and quieter sections was composed. It is intended that in diffusion the dynamic range will need to be extended more than it is, but the piece also has a wider dynamic range than what might be experienced in other works in the electronica genre. The spatial aspects of the piece were

[33] As discussed in chapter 1.1.2 in relation to Wishart's ideas in *On Sonic Art* (Wishart, 1996).

composed to allow for further enhancement in the multichannel concert setting, however, these are not so dramatic as to make two channel home listening problematic.

CHAPTER 4

4.0 Conclusions

4.0.1 Summary

This dissertation and its associated portfolio have mapped the beginnings of a compositional pathway between electronica and acousmatic music. The portfolio traversed Emmerson's language grid from the abstracted/mimetic, in the early works, and took steps towards the abstract/aural as the portfolio unfolded. 90 minutes of music have been composed which chart this journey and demonstrate that a variety of interpretations exist on how a composer might approach the creation of works that fuse elements of electronica and acousmatic music.

Further theories were explored which helped to identify and explore deeper links between acousmatic music and electronica. These were based around three distinctive areas and consisted of the materials of composition, the use and appreciation of space and spaces as well as the social and cultural influences associated with the two forms of music. Concerning materials, the portfolio explored the use of energy, gesture and texture, growth and depletion, dynamic range, field recordings and the use of the beat and pitched material as composition building blocks. Spatial aspects were explored and a collection of works were created for a range of listening locations, from pieces devised explicitly for the concert diffusion setting to pieces which allow for listening in a variety of situations, both at home as well as other performance locations. Finally the dissertation covered a range of ideas that relate to the composition of the works relating to the materials used, spatial composition ideas, as well as the cultural embedding of works, from the use of the sonic meme to how poietic leakage can place a work, or an entire idiom, into an associated culture.

4.0.2 Discussion

The portfolio shows that there are compositional links between acousmatic music and electronica and that there is a useful dialogue that can exist between the two art forms from

a compositional standpoint. There are a number of ways these links can be explored and exploited to compose new works which fuse elements of these two art forms. However, it is also true to say that there are some fundamental differences between the two musics as well, and these relate less to composition, but more to the way in which the music is performed and where it is heard.

Emmerson's language grid was an ideal tool to map this journey and to explore the compositional relationships between these two musical forms. The fact that it is a single tool to help to define most music is a useful starting point, as it allows the composer a way to conceptualise possible routes across it, albeit difficult ones at times. It was noted that during the creation of the portfolio there was a point at which compositions would 'flip' from one state to another, depending on a range of compositional factors. This flip was dependant on whether the piece was being composed around metric time or energy, and it was found that composing a piece around both metric time *and* energy produced some interesting compositional results. This idea was explored in *Volmet North*, *Flinch-Rest* and *Refract* in particular. *Volmet North* and *Refract* make use of this idea in a more delicate sense, and the result is not an overt use of beats, but more of an oscillation, which is in itself reminiscent of an energy-motion trajectory[34]. *Flinch-Rest*, on the other hand, makes more overt use of beats which are brought into being by other sound objects which contain energy-motions. However, even in this piece there is a discernable dividing line between the flip to the beat-based section from the energy-motion lead section, which occurs around half way through the work.

There is another important change in state that comes from composing space and spatial aspects to a work, which is also related to energy-motion. The idea of the 'real' seems to relate to acousmatic music more than it does to electronica, and for this reason the use of 'real space' tends to point more towards dealing with energy and motion and growth processes than it does to more typical music production found in dance music in general. There are examples of electronica that use the idea of real space as a compositional narrative, some of which have been discussed as part of this dissertation. It is in this area that there seems to be more room for compositional exploration within the genre.

[34] As described by Smalley in Spectromorphology (Smalley, 1997)

The final dividing line relates to performance spaces. This area has been addressed by practices associated with this research, namely devising and running the NoiseFloor conference, but does not form part of the portfolio. In this respect there still seems to be considerable division concerning where these two musics are heard. On one side, there is the concert diffusion situation; designed for focussed listening in a tightly controlled environment. On the other side there is everything else; Hi-Fi, iPod, headphones, internet steaming, Radio and club settings, all of which lie largely outside the composer's control and all are completely unique in their associated noise floors, fidelity and social and/or cultural distractions. Where event organisers have tackled this, in the case of the late night events of ICMC 2008 discussed previously, there have been mixed results with equally mixed reactions from audience members. The NoiseFloor conference addresses some of these issues by presenting concerts of hybrid and fusion works, as well as representing both the club setting and the diffusion concert setting under the same umbrella, with cross-over in between and equal importance given to all listening environments.

Concerning electronic music, there appears to have been a tangible shift in the line that delineates high art and popular art in recent years. It was no accident that electronic music labels of the early 1990s began releasing music that was generally more considered in terms of how it was composed, packaged and sold, and, importantly, where and how the music was experienced. The same music that was being labelled as 'electronic listening music' in the 1990s continues to exist today, and does so for the same reasons, rather than for any other purpose such as dancing or as a background to some other social activity. This has been an important shift in focus for popular music and demonstrates that there is a healthy audience for 'art music', or at least for a music that flirts at the edges of commercialism. It is conceivable that it will only take a small change in the wider culture to adopt acousmatic music as another sub-genre of electronic music.

What seems apparent is that many of the factors that appear to have divided these two forms of electronic music are becoming less significant, and the creation of a portfolio that allows dialogue between acousmatic music and electronica gives further evidence for this. Ben Neill's idea of the beat (Neill, 2002) being the no man's land that separates high art

and popular art has been shown to be an overly simplistic approach to what separates the two musical idioms in question. There have been four pieces created as part of this research that have used beats as compositional constructs, three of which have been scheduled and diffused at national and international art music conferences, not to mention the host of other acousmatic music works that use beat. Within electronica there are numerous examples of music that avoid the beat altogether, and many other examples that use structuring methods that are more akin to art music, such as the use of space as a compositional narrative and exploring timbral density and sparsity as central structures.

Within academic circles there appears to be a growing number of researchers who are exploring the relationships between acousmatic music and other musical forms, and there seems to be no sign of this diminishing in the coming years[35]. The term hybridity is not one chosen for this research, but a word that is appearing more often in conference proceedings. The continuing academic research happening inside various institutions and the commercial desire to develop new music, albeit held back by a conservative industry, will inevitably lead to these musics becoming aesthetically and hopefully sociologically closer as time passes. From an observational perspective, and despite concert audience numbers remaining lower than some might like in what are very challenging times for higher education in general, there still seems to be a healthy community of electronic music making, which can only be a positive sign for exploration and study in electronic music making and cross genre composition in general.

From undertaking this PhD the author has developed and refined a useful and refreshing new musical direction and an associated language. When exploring acousmatic music composition strategies inside an electronica framework, or vice versa, there are many invigorating ways to extend the musical possibilities of each of the idioms. This is not a point to stop composing this music and the completion of a 90 minute portfolio is not regarded as ‘job done’. There are now opportunities to develop this new language further and to continue to add tools to an emerging palette to enable deeper exploration at the boundaries of electronic music making.

[35] The author has attended conferences in the last two years where a number of 1st year PhD students have presented papers on related subjects.

4.0.3 Further research

There are further opportunities to be explored along the direction of this research, and it is the intention of the author to undertake work that continues to address both compositional and performative aspects that have been identified. Rather than the portfolio being the final answer to the question of composing fusion works, it is seen as the beginning of a new way of composing and offers many possible answers and further channels of exploration.

It is felt that the closest the portfolio got to answering the question asked in the introduction *how are acousmatic music and electronica compositionally related?*, and where the portfolio was at its most interesting, was in the composition of *Flinch-Rest*. The research has explored a range of methods for drawing electronica and acousmatic music together, but this piece is the launch pad for future work. The piece uses no samples of pre-existing music and makes sense in both the home listening situation as well as in the concert diffusion environment. It blends the two musical forms in a compositionally interesting way, by giving neither idiom a dominant role but also allowing both of them to be fully realised in a single composition. The piece has yet to be performed in a live laptop setting, but the idea of 'unfixing the fixed' that was discussed in chapter 2.2.1 offers a way in which the music can be split into stems and utilised in live performance, which this piece should lend itself to with ease.

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Appendix

Programme notes

Décalage (2008) 6'34 (Fixed media - 8 channels) by Ben Ramsay

Décalage attempts to explore sonic interactions between organic and synthetically produced 'real world' materials. The piece is based around recordings of wood and metal in various states of interaction and motion. Unprocessed elements of the original recordings are evident in the arrangement, and are also used as the basis on which the rest of the sounds in the work are derived.

At the heart of the piece lies a transformation, or shift. The organic gives way to the synthetic. The synthetic becomes acousmatic, and the natural slowly becomes unnatural as all reference to the original sound sources, and environmental cues, are stripped away. Familiar, brittle, erratic sounds, which are present at the beginning of the piece, mutate and give way to a darker, blurred and more vague audio world as the shift towards the synthetic takes place. The mutation from the real to the unreal is further emphasised as the sounds develop from typical and ordinary to a more sinister, oppressive sound world.

Solid Phase (2009) 7'36 (Fixed media - 8 channels) by Ben Ramsay

Solid Phase is composed around underwater hydrophone recordings made in the winter of 2008 on the canal systems around the West Midlands, United Kingdom. Transfer of energies are heard between ageing canal boat hulls and the frozen water that surrounds them as they rock on their moorings, influenced only by wind. Some of these energy transfers are subtle rubbing or scraping gestures, others are more vigorous collisions.

Much of the sonic material remains unprocessed in terms of timbre and pitch. Therefore, compositional processes were very much driven by the surroundings and natural influences on the sounding materials. Even though very little processing was undertaken on the original recordings, much of the material maintains an acousmatic, abstract quality, as the sounds were sourced from an often unheard and unfamiliar source.

Low-bypass (2010) 22'00 (Fixed media - 8 channels) by Ben Ramsay

Low-Bypass is derived entirely from two-channel and four-channel recordings of jet engines. These recordings were taken while the engines were under their own power as well as 'at rest'; the motion and sound being generated was a result of the wind blowing through their tremendous turbine blades. The idea of energy transfer was a central theme in both the recording and compositional processes. However, source and cause in this context are, by their very nature, abstract. Whilst previous compositions have relied more on processing sounds in order to obscure and abstract them from their source, the acousmatic nature of this work relies less on processing and transformation, but instead gives more emphasis to the selection of sound sources and the recording techniques utilised to capture them.

Papa November (2011) 5'36 (Fixed media - 2 channels) by Ben Ramsay

Papa November is the fourth piece from an EP entitled 'Circles of Latitude' which was composed as part of an on-going exploration of the compositional links between intelligent dance music and acousmatic music practices. The piece is composed roughly around a metric grid and is based on more synthesised electronic sources rather than recorded and processed ones. The piece was released on the 'Leaves' label in early 2012 on the CPulse 'Future Innovation' CD in 2011 and is available on the Circles of Latitude EP from www.benramsay.co.uk

Volmet North (2011) 7'58 (Fixed media - 2 channels) by Ben Ramsay

Volmet North is the first piece on an EP which is composed around broadcasts from known and unknown sources, both foreign and more 'local' to the recording location - somewhere in the West Midlands, UK. The central theme of the piece is the capture (and recapture) of materials that should have been, or were already, lost in the aether. Much of the rest of the materials in the piece, and indeed the rest of the EP, are formed from transformations of electronica created by the composer between1999 and 2004. The inclusion of these transformations is intended as the beginning of an acousmatic 'remix' aesthetic by treating earlier compositions as concrete source materials with which to work.

The Batteries Of Orchards (2012) 10'15 (Fixed media - 8 channels) by Ben Ramsay

The Batteries Of Orchards is formed from various recordings of insects from around the UK including bees from the Welsh borders and wasps from the south-west. With some close recording techniques and nominal processing the piece aims to explore the curious world that these garden creatures inhabit.

Flinch-Rest (2012) 9'06 (Fixed media - 2 channels) by Ben Ramsay

Flinch-Rest is the result of exploring the compositional shapes and structures of acousmatic music and electronica and blending elements of these structuring processes inside a single composition. The main elements of Flinch-Rest are organised around percussive, physical and gestural ideas which attempt to blend arrangement strategies of acousmatic and electronica idioms.

The piece also explores spatial composition strategies which are more familiar to the world of acousmatic music practice, but does so with the sonic memes that are often associated with electronica such as the TR808 and TR909 kick drums, intricately programmed glitchy percussive elements as well evolving pad textures.

It is intended that this piece is equally capable of being performed in a multichannel diffusion concert or listened to on a home 2 channel set-up without any loss of value or identity. This is possible due to the piece being driven by physical gestures which are constructed from both rhythmic and textural information.

Reload (2013) 7'12 (Fixed media - 2 channels) by Ben Ramsay

Reload is the first in a trio of works based around the theme of injecting energy into recordings of electronica and dance music. This reinjection of energy allows the works to

transform from one state to another, like a chemist who changes the state of an element by adding energy to the substance.

Reload started out as a collection of seminal dance music works whose timbre might be familiar to some. These sources were then transformed into new states which were then woven back together to form a new composition, allowing the piece to be recomposed around the latent energies that the transformation process created.

Refract (2013) 7'04 (Fixed media - 2 channels) by Ben Ramsay

Refract is the second in a trio of works based around the theme of injecting energy into recordings of electronica and dance music. This reinjection of energy allows the works to transform from one state to another, like a chemist who changes the state of an element by adding energy to the substance.

Refract is based around transformations of single piece of electronica which was deconstructed and reformed in a very different state to the original work that created it. The larger compositional structure, and some timbral aspects of the original piece are preserved, but the energy that remains after the processing has taken place allows for a new interpretation of the source sounds.

Repeat (2013) 7'12 (Fixed media - 2 channels) by Ben Ramsay

Repeat is the third in a trio of works based around the theme of injecting energy into recordings of electronica and dance music. This reinjection of energy allows the works to transform from one state to another, like a chemist who changes the state of an element by adding energy to the substance.

Repeat is formed from an original piece of electronica composed specifically to host an injection of spatial energy. This energy allows some of the structures that are associated with more 'popular' forms of dance music to gain additional spatial information and offers a supplementary narrative to the work.

Performances and releases

Décalage

Performed at:

- Toronto Electroacoustic Symposium 2011, Toronto, Canada (12.08.11)
- Australasian Computer Music Conference (listening room) - University of Auckland, New Zealand. (06.07.11)
- Electroacoustic Juke Joint Festival, Delta State University Mississippi ,USA (13.11.09)
- MTI & BEAST exchange, De Montfort University (18.03.09)
- Broadcast worldwide on FOLDOVER radio (internet)
- Available on-line https://soundcloud.com/benramsay/d-calage

Solid Phase

Performed at:

- MTI 10th Birthday Series - Research Celebration - De Montfort University, Leicester, UK. (25.11.09)
- MTI & BEAST exchange, De Montfort University (18.03.09)
- NoiseFloor Festival - Staffordshire University, Stafford, UK. (17.01.10)

Low-bypass

Performed at:

- MTI Team Event 2, De Montfort University (10.11.10)
- MTI Team Event 1, De Montfort University (12.10.11)
- Performed live at SOUNDkitchen, Birmingham, UK (12.05.11)
- Performed at Sound Sight Space and Play conference, De Montfort university (02.06.10)
- NoiseFloor festival 2011, Staffordshire University (14.01.11)

Released on:

- amp bit if go recordings (http://www.ampbitifgo.co.uk/amp010.html) (01.12.11)

Batteries Of Orchards

Performed at:

- Sonic Interactions III - Liverpool Hope University, Liverpool, UK.(22.10.12)
- MTI Team event - De Montfort University, Leicester, UK. (24..10.12)
- Sound, Sight, Space and Play conference - De Montfort University, Leicester, UK. (06.06.13)

Papa November

Performed at:

- iFIMPaC, Leeds College of Music (14.12.12)
- AGOS Studio at the Royal Conservatoire of Scotland, Glasgow (13.03.12)

Released on:

- Leaves Label (http://leaves.lt/leaving-eleven-lvs001/) (02.01.12)
- CPulse 'Future Innovation' and online at http://aural-initiative.com/cpulse/CD/cpcd005.swf (2011)
- Available on-line as part of the Circles of Latitude EP - https://soundcloud.com/benramsay/sets/circles-of-latitude-ep

Volmet North

Performed at:

- New York City Electroacoustic Music Festival, NYC, USA (05.04.13)
- From Tape to typedef conference, University of Sheffield (31.02.13)
- Performed live at meta-2 concert, De Montfort university (13.03.13)

Released on:

- amp bit if go recordings (http://www.ampbitifgo.co.uk/amp010.html) (01.12.11)
- Available on-line as part of the Circles of Latitude EP - https://soundcloud.com/benramsay/sets/circles-of-latitude-ep

Flinch-Rest

- Performed at:
- MTI New Media Events Launch Party 2, De Montfort University (23.10.13)
- iFIMPaC, Leeds College of Music (14.03.14)

Reload

- Selected for performance at Fylkingen in Stockholm later in 2014

Refract

- Selected for performance at Fylkingen in Stockholm later in 2014

Repeat

- Not yet sent to any concerts.

Live Laptop performances

Meta_2 - De Montfort University, Leicester, UK. (27.03.13)

NoiseFloor Festival - (live laptop improvisation) Staffordshire University, Stafford, UK. (02.05.12)

SOUNDkitchen's SONICpicnic - (DJ set) VIVID, Birmingham, UK. (29.07.11)

SOUNDkitchen - Hare & Hounds, Birmingham, UK. (12.05.11)

A Thing About Machines Festival - St. John's Church, Coventry, UK. (25.09.09)

Correspondence

Email conversation with Andrew Lewis from 11th June 2013

Hi Andrew,

Thanks so much for taking the time to write this much detail on your thoughts. They will help a great deal with my current research and will give me some really great footholds which I can launch from. I'm looking at various definitions/interpretations of Acousmatic music and yours are really clearly defined so thanks a lot.

I'm sure the ideas here will make for a really engaging paper when you get the time/space to get them down. I particularly like the link you make between Smalley's gestural surrogacy and the nothing to see factor and how they work together. This puts the cold sterile feel that Smalley discusses in Spectromorphology into some useful focus I think.

Lots to think about here!

All the best and thanks again.

Ben

On 11 Jun 2013, at 19:27, Andrew Lewis <a.p.lewis@bangor.ac.uk> wrote:

Hi Ben

Yes, I remember! Thanks for getting in touch.

I attach the ppt. The fourth point is 'Gesture based' or something like that.

The time structured thing is really important (and relates to the fixed medium thing). Music, at least in the western art music tradition, is 'discourse', it forms an 'argument' which unfolds over time. Which is to say, to put it crudely, one thing leads to another at right time.

This seems obvious, but not all sound-based art does this. All sound art is of course time based to some extend - you can't have sound without time! But time-based material doesn't mean time-based art (or, as I would call it, 'music'). For example, a sound installation in a gallery does not usually have a beginning and end. Instead, you turn up when you like, wander around, then leave when you

decide to. Often, it won't make much much difference when turn up, how long you stay, or when or leave - but even if it does, the point is that it's not something the artist is consciously controlling as part of the art work. Rather, the listener is shaping their own temporal experience for themselves. Of course, the artist will have considered timing as part of the material - perhaps things happen periodically, more often less often etc., but not in a way that leads the listener through a process, step by step: establishing ideas, making propositions, creating expectation, fulfilling or foiling expectation, springing surprises, creating climaxes, bringing threads together, creating closure. All these require the composer to be in complete control over exactly what happens when, over the pacing, the juxtaposition of sounds in time, and sounds with silence, and so on.

This is also important because of the role of temporal context in changing how we perceive material. So if you have some material that is highly detailed, we will be able to appreciate those details if it lasts a short time, but if it goes on for a long time we will hear it more as a generalised texture. In the same way, if it comes in the middle of something very passive and static, we will hear the detail very clearly, but if comes in the middle of something very active and complex, we won't focus on the detail in the same way. So temporal organisation has a transformational effect on material more powerful than any plug in.

Of course, you can have fixed medium work that doesn't make good use of temporal structuring - for example, a piece might just be a long, featureless drone or texture. In that case it functions a bit like an installation - you could probably turn up late to the concert, or doze off in the middle, without it having much impact on your experience! But in what I call acousmatic *music*, it matters a lot that you hear things in a particular temporal order.

'Gesture based' links back to the 'nothing to see' point. One way that we make use of the 'nothing to see' situation is to imply various kinds of physical (or quasi-physical) gestures, causalities, processes and so on. It's all the stuff Smalley writes about. I think it's important to what makes acousmatic music 'music'. Maybe this is because it is something it shares with acoustic music (where of course, there is always some sort of energetic causality). It's part of what we expect music to do and to be. Some 'acousmatic' pieces which use (say) a lot of synthesised, sterile sounds (much loved in the US!) don't have that sense of implied physicality, and to me they sound very 'unmusical'. To me, a lack of implied physicality probably has the same effects as the lack of a 'tune' has on most people!

I hope that helps. Maybe one day I should get round to writing some of these thoughts down properly. But I probably need to do a lot more thinking before doing that!

Cheers

Andrew

--
Rhif Elusen Gofrestredig / Registered Charity No. 1141565

<Sheffield talk.pptx>

On 11 Jun 2013, at 17:02, Ben Ramsay wrote:

Hi Andrew,

I wonder if you remember me. We met in New York after my concert where I was quizzing you about the definition of acousmatic music that you gave at a talk at De Montfort University.

I'm currently in my final year of a PhD at DMU with Simon Emmerson and I was wondering if you might be able to send me the slides or elaborate on your three (you mentioned four in NY) point description of acousmatic music.

You mentioned:

1. There is nothing to see and we know it.
2. Exists on a fixed medium
3. It is time structured.
4. I can't remember the fourth you discussed.

The reason for asking is that I am after some definitions that I can measure my own work which adheres to your definition but also moves away from it depending on how the music is performed.

I am especially interested in the third and fourth elements as the first two are self explanatory. I'm a little unsure about the third as you might argue that all music is time structured, but I wonder how you differentiate between Acousmatic music and other forms of music.

Hope you find time to reply.

Best regards

Ben

--

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Tables and Figures

Phase	Time stamp	Motion	Motion graphic
Introduction	00:24	Growth	
Phase 1	00:43	Growth	
Phase 2	01:25	Growth	
Phase 3	02:20	Depletion	
Termination	03:21	Termination	
Phase 4	03:37	Static	
Phase 5	04:00	Growth	
Phase 6	04:37	Depletion	
Phase 7	05:00	Depletion	
Phase 8	05:25	Depletion	

Table A1.0 Listing the 8 Phases of 'Foil' by Autechre and their associated motion.

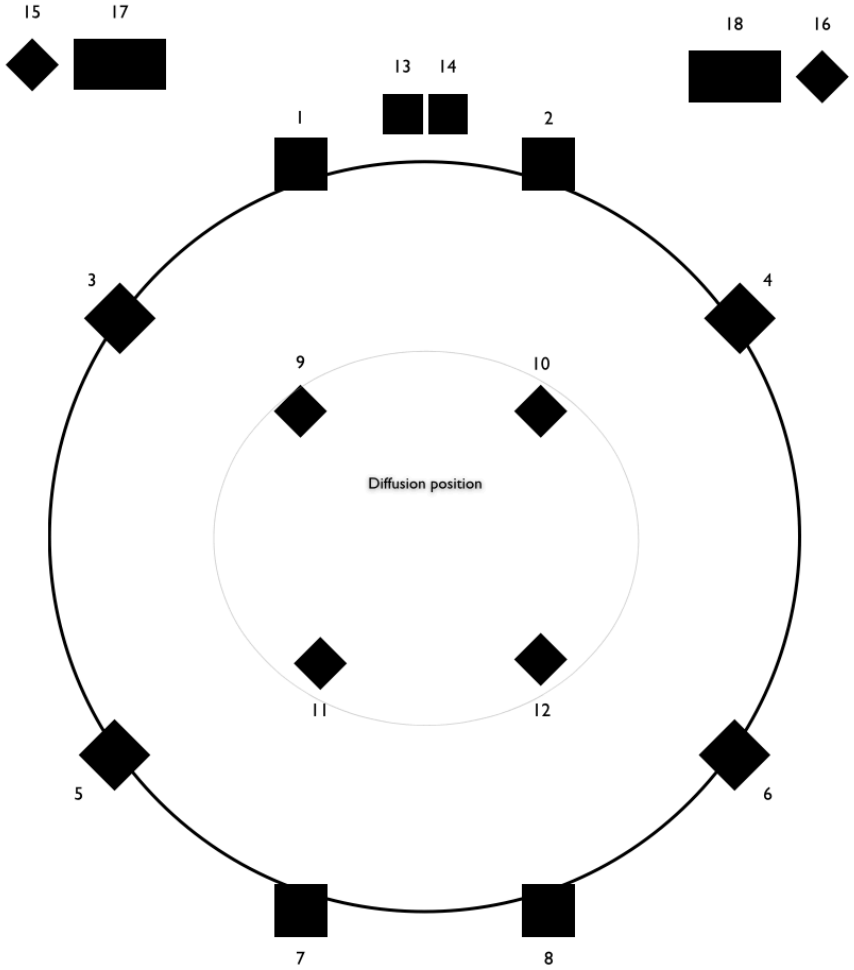

Figure A1.0 – Speaker map used for diffusion tests, based on Harrison's BEAST system. Speakers 1-8 are the main ring of eight. Speakers 9-12 are the inner ring, 13 and 14 are punch, 15 and 16 are floods and 17 and 18 are the subs.

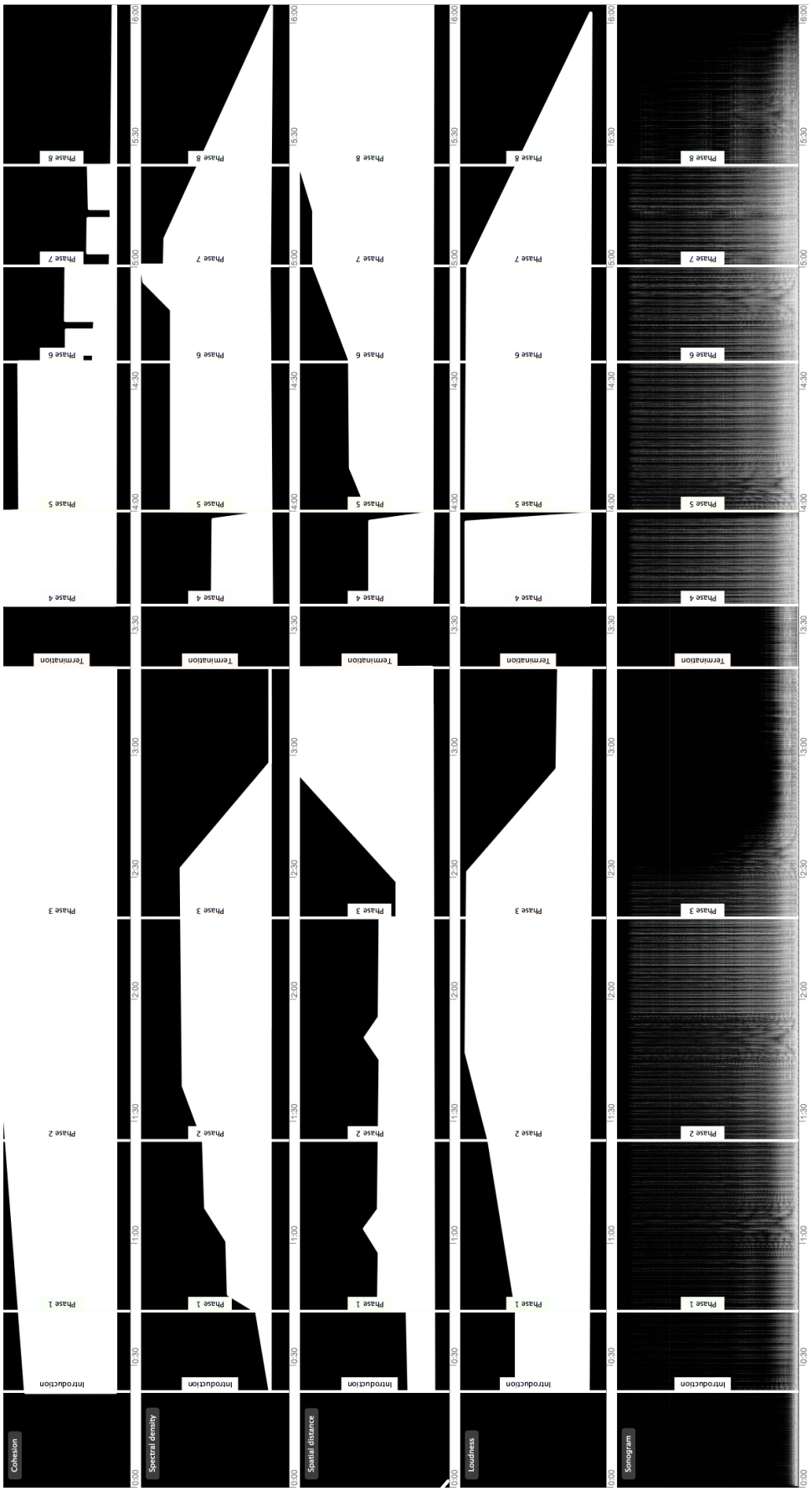

Figure A2.0 – Original map of 'Foil' by Autechre denoting the eight Phases and associated parameters.